

DUTIES AND RESPONSIBILITIES OF BOD/OFFICERS AND MEMBERS

The management of the BWSA rests on the Board of Directors/Officers who are elected by the general membership. The Board elects from among themselves the Officers of the association: President, Vice-President, Treasurer and Secretary. The President designates the Bookkeeper and Caretaker of the BWSA. The duties and responsibilities of the Board/Officers, Bookkeeper and Caretakers are shown below.

(1) Duties and responsibilities of the Board of Directors

- Oversee the activities of the BWSA
- Formulate policies and procedures to carry out the affairs of the BWSA
- Elect the BWSA officers
- Attend all meetings of the Board and the General Assembly
- Attend trainings for BOD/Officers conducted by PWSU/MSLT

(2) Duties and responsibilities of the President

- Conduct/Preside over all meetings of the General Assembly
- Preside over BOD meetings
- Execute policies relative to the management of the Association and the maintenance of the water facility
- Act as arbitrator in settling conflicts among members regarding BWSA operations
- Represent the Association in any activity involving BWSA operations
- Investigate the current condition of the Association and recommend measures for its improvement or solutions to its problems
- Perform such other duties as may be assigned by the Board of Directors

(3) Duties and responsibilities of the Vice-President

In the event of death, incapacity or refusal of the President to perform higher duties and responsibilities, the Vice-President shall assume the Presidency. He shall perform the duties of the President and such other duties as may be assigned by the Board of Directors.

(4) Duties and responsibilities of the Secretary

- Attend all meetings and record the minutes
- Call meetings in the absence of the President and the Vice-President and preside until a temporary presiding officer is chosen
- Prepare and send notice to all Association meetings
- Keep all papers/documents pertinent to the Association
- Perform such other duties as may be assigned by the Board of Directors

(5) Duties and responsibilities of the Treasurer

- Attend all meetings of the Board and the General Assembly
- Take proper custody of all funds and properties of the Association
- Ensure the proper issuance of official receipts for money received by the Association
- Ensure that all expenditures are authorized by the Board and are covered by official receipts
- Deposit all funds of the Association in a bank designated by the Board; and
- Produce periodic reports and account reconciliations as prescribed
- Perform such other duties as may be assigned by the Board of Directors

(6) Duties and responsibilities of Bookkeeper

- Keep the financial records of the Association;
- Collect water fee contributions from and issue receipts to user members;
- Remit collected water contributions to the BWSA treasurer;
- Submit a quarterly financial status report to the Board of Directors or as often as the Board may require;
- Attend BOD meetings and BWSA training/activities conducted by the PWSU/MSLT
- Perform such other duties as may be assigned by the Board of Directors

(7) Duties and responsibilities of Caretaker

- Remind the members of the proper use of the facility
- Ensure that the water facility is in good operating condition
- Keep the record of the operation and maintenance of the water facility
- Report to the Board of Directors (BOD) any damaged or repair needs of the facility
- Perform minor repairs of the water facility
- Assist in the collection of water fee contributions
- Attend meetings of the Board as may be required
- Attend skills training on operation and maintenance conducted by the PWSU/MSLT
- Perform such other duties as may be assigned by the Board of Directors

(8) Duties and responsibilities of Members

- Pay monthly water fee contribution;
- Attend meetings and training activities designed for members;
- Observe rules and regulations and policies approved by the BOD/Officers;
- Remind other water users to use the facility properly;
- Keep the premises of the water facility clean, sanitary and free from excess water which may cause contamination of the water source; and
- Adopt proper health and sanitation practices.

PROCEDURES FOR BWSA FINANCIAL OPERATIONS

Bookkeeping records an organization's financial transactions involving the receipt and expenditure of money in an organization. The organization may be a small business or large corporation. It may be government or a non-government organization. Regardless of the size of the organization, it provides a standard method for recording and reporting financial transactions of all kinds. The information obtained from accurate and timely bookkeeping provides timely information on the financial health of the operation.

The information contained herein will enable the BWSA bookkeepers to record financial transactions and prepare financial reports. The manual presents the overall picture, through the General Accounting Plan procedures. A step-by-step guide follows the General Accounting Plan through all the transactions, entries and reports. Each transactions, entry and report has a corresponding form. Each form is presented with explanations on its function and how it relates to the other forms. Instructions are provided line-by-line for a clear understanding.

(1) BWSA Business Operation

The BWSA business operation is simple. Funds are generated through water fees. Although there may be other sources of income, user fees will be the main source of income. Money is spent to maintain the barangay water system and other properties owned by the association. Other funds spent include expenses for administration, parts and supplies.

With only a few sources of income and expenses, financial transaction entries can be made quickly as they occur. If transactions pile up, even a simple operation can become very complicated. It is recommended that all transactions be recorded daily. If this is done regularly, periodic reports can be prepared quickly and accurately.

(2) Maintenance and Custody of Documents and Records

Safekeeping the books of accounts, related records, accounting forms and reports is a major responsibility of the bookkeeper. Accounting forms used as the basis for recording should be arranged and filed separately in sequence. All records and documents should be locked up and access should be limited to authorized BWSA officers and personnel.

The BWSA officers should agree on the reports to be prepared, who received the reports and how frequently. It is recommended that certain records be maintained and certain reports be compiled. It is up to the BWSA officers to determine how often these reports are to be made and if additional reports are necessary. Some larger BWSAs may need monthly reports. Smaller BWSAs may only require quarterly reports.

(3) General Accounting Plan (GAP)

The flow of accounting and reporting is shown in the General Accounting Plan, Figure 1. The GAP will guide users through this section as each procedure is explained. The GAP contains four columns of boxes. Columns are headed:

- Transactions - consisting of cash and non-cash transactions
- Document - for recording different types of financial transactions
- Books - to maintain a record of financial transactions
- Reports - to summarize all financial transactions for given period.

(4) Transaction Defined

The BWSA financial transactions are classified as:

- Cash Transactions
 - Cash-In (cash receipts)
 - Cash Out (cash disbursements)
- Non-Cash Transactions

Money, incoming and outgoing, is classified as cash transactions. The GAP shows two kinds of cash transactions, cash-in (cash receipts) and cash-out (disbursement). There are also non-cash transactions which document money owed to the BWSA or money that the BWSA owes.

1) Documents for Cash Transactions

The Official Receipt (OR), (See Figure 2) and the Voucher (See Figure 3) are the source documents for cash transactions. ORs and vouchers are called source document because they initiate the bookkeeping process.

Each time a person gives money or its equivalent to the BWSA, an OR is issued to the person. Each time the BWSA pays money to a person, a voucher is completed to

show that it is an authorized expenditure. The voucher also records to whom the money was given and for what purpose.

Both the OR and voucher are numbered and all numbered documents should be accounted-for. This means that if an OR or a voucher has been incorrectly filled out, it must be kept for the record.

a) The OR records all money received BWSA and must specify:

- The date funds are actually received
- The name and address of the person paying the money
- The amount received, both in words and in figures
- An explanation or purpose of the payment
- Confirmation of receipt as shown by the authorized collector's signature, usually the bookkeeper
- The billing form number, if money is for payment of water fees

b) The voucher records all money paid out by the BWSA. Each numbered voucher must specify:

- The date money is actually paid
- The name and address of the person receiving the money
- The total amount of money paid, in words and in figures
- Details of payment, including invoice number
- Signature of person authorized to approve payment
- Confirmation of receipt as shown by the authorized collector's signature, usually the bookkeeper, of the person paying money
- Signature of person receiving the money and date received

2) Document for Non-Cash Transactions

The sources for recording non-cash transactions are the billing form and the invoices. The billing form documents money that is owed to the BWSA. Invoices or statements of account are documents made by others showing money owed by the BWSA. These are transactions which do not involve cash collection or payments, and therefore, are not to be recorded in the Cash Record Book.

a) The Billing Form (See Figure 4) is used to notify water consumers of the fees owed to the BWSA covering a certain billing period. Billing forms may be made monthly or quarterly as the Association decides. Billing forms must specify:

- List of services rendered
- The name and address of the person being billed
- Period covered by this bill, beginning and ending dates
- The total amount of money owed
- Date of billing
- Date the bill should be paid
- Official signature, usually the bookkeeper

Unaccounted Water Fees are examples of non-cash transactions which should be recorded in the Receivable Book.

b) The Invoice or Statement of Account (See Figure 5) is a document prepared by the seller and presented to the BWSA showing money owed to the seller by the BWSA. Invoices usually contain:

- An invoice number
- The person or company sending the invoice
- The name of the BWSA that owes the money
- Particulars of goods or service provided
- The breakdown of money owed and total amount due
- A payment due date
- Name or signature of the person requesting payment

Unpaid invoices on repair and maintenance and other unpaid expenses, such as honoraria are recorded in the Payable Book.

(5) Book of Accounts

The book of account are basic records used to record all financial transactions. Three books of accounts are maintained as described below.

1) Cash Record Book

The Cash Record Book is used to record all cash incoming and out-going transactions. The OR is recorded in the Credit column (Money Received). The voucher is recorded in the Debit Column (Money Disbursed). All entries are recorded by date, including all cancelled forms, properly notes. After each credit or debit entry, the amount is added or subtracted from the Daily Balance. At the end of

the month, the entries form the bases for preparing the Statement of Operation and the Cash Position Statement.

2) Receivable Book

Unaccounted account from the members and outside parties are recorded in the Receivable Book (See Figure 7). This book shows the transaction date, the billing number, the household head, the amount and explanation or remarks about the nature/condition of the account.

3) Payable Book

Unpaid accounts on the expenses incurred by the BWSA such as salaries or wages, repair and maintenance and other expenses are recorded in the Payable Book (See Figure 8). This book shows the transaction date, the payee, the nature/explanation of the unpaid account and the amount.

(6) Financial Reports

The BWSA reports are usually prepared monthly or quarterly. The financial reports are prepared to inform the BWSA financial members of the Association's financial status. In preparing the BWSA financial reports, the bookkeeper reviews all source documents supporting the transaction to countercheck the amount appearing in the books. The recorded transactions should be summarized and arranged chronologically to produce a report easily understood by BWSA officers and members.

1) Statement of Operations

The statement of Operations (See Figure 9) is prepared monthly to record the income and expenses incurred by the Association in its operation during the period. The statement shows the revenues earned, the operating expenses incurred and the income or loss as a result of operation.

2) Cash Position Statement

The sources of information when preparing the Cash Position Statement (See Figure 10) are the cash record books and the statement of operations. The report is prepared to determine if the Association can cover its operating expenses. This statement shows the beginning cash balance, the cash receipts for the period, the cash disbursement, and the cash balance ending for the period.

3) **Financial Summary Report (Annual Report)**

The financial Summary Report (See Figure 11) is prepared to summarize the periodic reports prepared during the year and the supporting schedules.

(7) **Bookkeeping Procedures**

A step-by-step review of all BWSA transactions can be accomplished by following the accounting entries and reports.

GENERAL ACCOUNTING PLAN (GAP)
FOR BWSA TRANSACTIONS

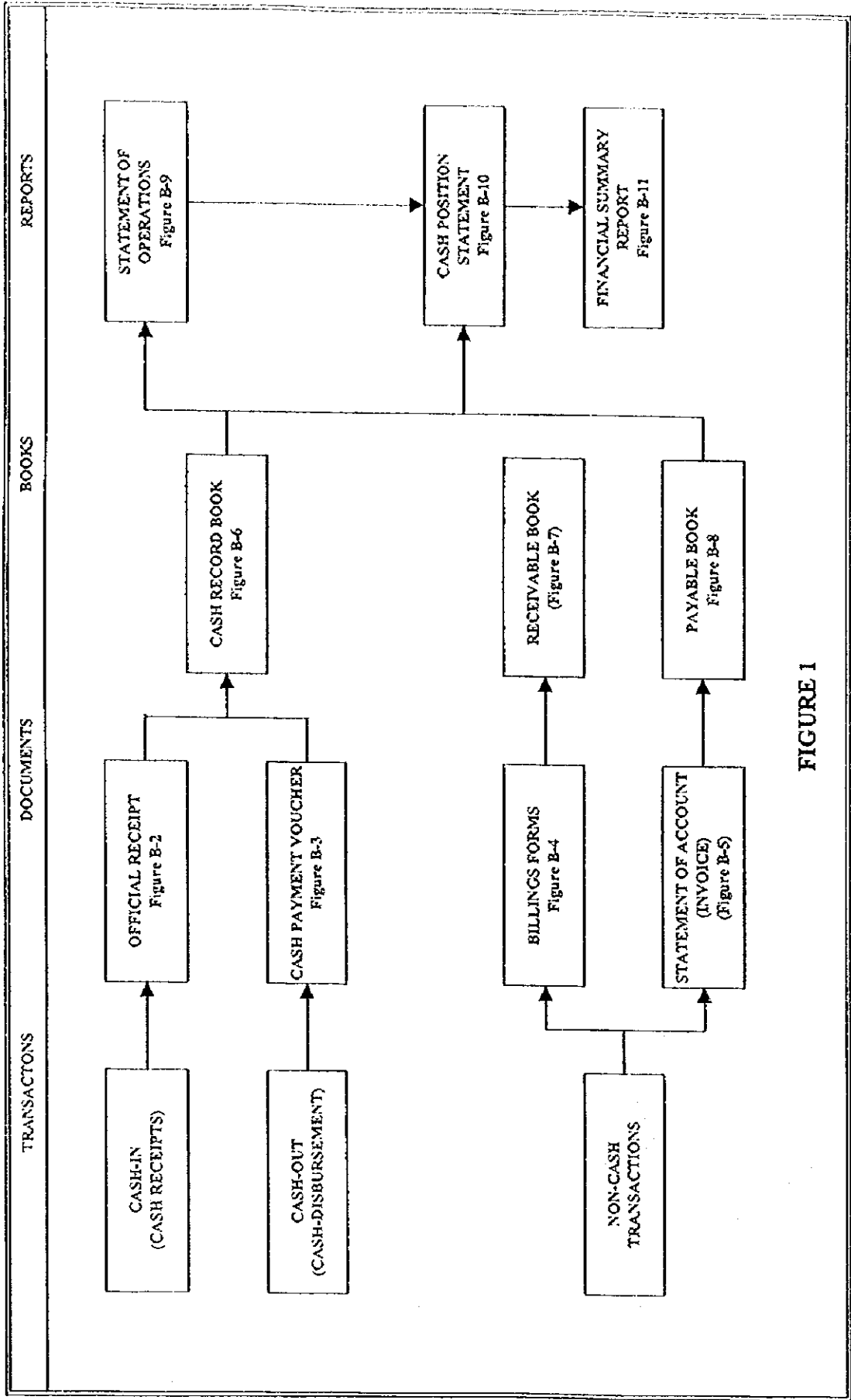


FIGURE 1

OFFICIAL RECEIPT

BWSA _____

OR. NO. _____

Date: _____

Received from _____

the sum of _____ (P _____)

in payment of _____

Billing Form # _____ (For payment of water fees only).

Treasurer/Collector
(Bookkeeper)

Note: Print Name Below Signature

(IN TRIPLICATE)

Complete Official Receipt in Triplicate

Official Receipt must be issued for all payments received by the Bookkeeper.

FIGURE 2

**CASH PAYMENT
VOUCHER** _____

CPV No. _____
Date: _____

Paid to : _____

Address : _____

In the sum of : _____ (P _____)

PARTICULARS	AMOUNT

Approved By: _____

Received from _____

The amount of _____

As payment for the above described.

Received By _____

Date Received _____

Note: Print Name Below Signature

**VOUCHER
(IN TRIPLICATE)**

Each time a disbursement is made, a cash payment voucher must be prepared to support such disbursement.

FIGURE 3

Name of BWSA

Barangay, Municipality

Province

BILLING FORM
for
WATER CONSUMPTION

Name of Member _____

Address: _____

No. _____

PERIOD COVERED					AMOUNT
FROM		TO			
MONTH	DAY	MONTH	DAY	YEAR	

Date of Billing: _____ Please pay On or Before: _____

Please pay your bill at the Office on or before the date shown above.

BWSA Treasurer

Note: Print Name Below Signature

Billing must be prepared and sent to all BWSA members for their monthly dues as a member of their monthly obligation to the Association.

FIGURE 4

Date: _____

Invoice # _____

INVOICE

Sold to: _____

ITEM	NO.	UNIT PRICE	PRICE
TOTAL			P

Received By: _____
(Print Name below Signature)

FIGURE 5

BWSA _____

CASH RECORD BOOK
COLLECTION/DISBURSEMENT
Month: _____ Year: _____

DATE	PARTICULARS	CREDIT (Money Received)	DEBIT (Money Disbursed)	DAILY BALANCE

This book records all cash transactions (collection/disbursements) made by the BWSA, and calculates a daily balance.

FIGURE 6

 Name of BWSA

 Barangay, Municipality

 Province

RECEIVABLE BOOK

DATE	BILLING FORM NO.	HOUSEHOLD HEAD (Family Name)	AMOUNT DUE	REMARKS

This form records all accounts due to the Association

FIGURE 7

 Name of BWSA

 Barangay, Municipality

 Province

STATEMENT OF OPERATIONS
 For the Month _____, _____

Revenues:			
Water Fees	_____	P	_____
Others (Specify)	_____		_____
Total Revenues	_____	P	_____
Operating Expenses:			
Salaries	_____	P	_____
Supplies	_____		_____
Repair and Maintenance	_____		_____
Others (Specify)	_____		_____
Total Operating Expenses	_____	P	_____
Net Income/Loss		P	_____

Prepared By: _____

Date Prepared: _____

Certified true and correct:

 BWSA Treasurer

Date Certified: _____

Note: Print Name below signature

At the end of each month, the bookkeeper prepares the Statement of Operations for the previous month.

FIGURE 9

 Name of BWSA

 Barangay, Municipality

 Province

CASH POSITION STATEMENT
 For the Month _____, _____

Revenues:			
Water Fees		P	
Contribution			
Others (Specify)			
Total Revenues		P	
Less: Operating Expenses:			
Salaries		P	
Supplies			
Repair and Maintenance			
Others (Specify)			
Total Operating Expenses		P	
Cash Balance, During the Period		P	
Add: Cash Balance, Beginning		P	
Cash Balance, Ending		P	

Prepared By: _____ Date Prepared: _____

 BWSA Bookkeeper

Note: Print Name below signature
 Cash Position Statement summarizes the Association's transactions for the month ended. The Bookkeeper fills up this form every end of the month.

FIGURE 10

Name of BWSA

Barangay, Municipality

Province

FINANCIAL SUMMARY REPORT
Year End _____

I. Financial Results

1. Total Revenues	_____	P	_____
2. Total Expenditures	_____	P	_____
3. Total Cash on Hand	_____	P	_____
4. Total Cash in Bank	_____	P	_____
5. Total Accounts Receivable	_____	P	_____
6. Total Accounts Payable	_____	P	_____

II. Findings/Recommendations:

Prepared By:

Date Prepared:

BWSA Bookkeeper

Note: Print Name below signature

Financial summary report is made after a year of operation. It provides information to show whether the association profited or not.

FIGURE 11

Table 9.4.1 Format for Level I Project Data

Form _____

PROPOSED LEVEL I PROJECT DATA	
Notice : This form shall be accomplished upon instruction on PS F/PWSD	
LOCATION	1.1 Barangay/Sitio _____
	1.2 Municipality _____
POP. DATA	2.1 Total Community/Barangay Population _____
	2.2 Total Number of Households _____
INFORMATION ON THE WELL SITE	1.3 Province _____ 1.4 Region _____
	2.3 Proposed Population to be Served _____ 2.4 Proposed Number of Households to be Served _____
INFORMATION ON THE WELL SITE	3.1 Ownership : <input type="checkbox"/> Public <input type="checkbox"/> Private
	3.2 Description : 3.3 Location: 3.4 Donor (If Private Lot):
INFORMATION ON THE WELL SITE (Use separate sheets if necessary)	4.1 Type of Point Source: <input type="checkbox"/> Deep Well <input type="checkbox"/> Shallow Well <input type="checkbox"/> Spring <input type="checkbox"/> Others (dug well pond)
	4.2 Ownership : <input type="checkbox"/> Public <input type="checkbox"/> Private
4.3 For wells : Casing diameter _____ in. or _____ m. Casing depth _____ ft. or _____ m. Water level Well _____ ft. or _____ m. Well capacity/yield _____ gpm. or _____ m.	
4.4 For Springs : Capacity/yield _____ gpm. or _____ lps. Approx. elevation above or below _____ Service Area _____ ft. or _____ m. Location <input type="checkbox"/> Inside of service area <input type="checkbox"/> Outside of service area Approximate distance from center of service area _____ km.	
Prepared by : _____	
_____ Municipal Liason Staff Date	

Table 9.4.2 Format for Level II Feasibility Study

FEASIBILITY STUDY (Level II) Notice: This form shall be accomplished upon instruction of the PST/PWSO		Form Barangay _____ Municipality _____ Province _____ Region _____	
PROJECT SUMMARY			
POPULATION DATA	1. Present Population	2. Design Population	3. Number of Households
			6. Number of Faucets
TECHNICAL DATA	4. Type of Source <input type="checkbox"/> Spring <input type="checkbox"/> Well <input type="checkbox"/> Surface Water	5. Type of System <input type="checkbox"/> Gravity <input type="checkbox"/> Pumped	7. Pump Horsepower _____ HP
			8. Pumping Time _____ Hours per Day
	9. Total Average Daily Demand _____ Liters	10. Storage Tank Capacity _____ Liters	11. Pump Discharge Capacity _____ IPS
FINANCIAL DATA	12. Total System Cost P _____	13. Maximum Loan Amount P _____	14. Interest Rate _____
	15. Local Equity P _____	16. Funding Cost per Household P _____	17. Repayment Period (months) _____
	18. Type of Local Equity <input type="checkbox"/> Cash <input type="checkbox"/> Labor <input type="checkbox"/> Materials <input type="checkbox"/> Others, _____		
	19. Total Monthly Expense P _____	20. Monthly Fee Per Household P _____	
ANNEXES	<input type="checkbox"/> 1 Survey Form <input type="checkbox"/> 5 Design of Pipe Lines <input type="checkbox"/> 9A Fittings Schedule <input type="checkbox"/> 12 Financial Analysis <input type="checkbox"/> 2 Map of the Project Area <input type="checkbox"/> 6 Design of Reservoir (G.I. Pipes) <input type="checkbox"/> 13 Availability of Local <input type="checkbox"/> 3 Design Criteria and and Pump <input type="checkbox"/> 9B Fittings Schedule Equity Basic Design Data <input type="checkbox"/> 7 Detailed Design Plan <input type="checkbox"/> 10 Bill of Materials <input type="checkbox"/> 4 Schematic Diagram of <input type="checkbox"/> 8 Pipes Schedule <input type="checkbox"/> 11 Cost Summary the System		
Prepared by : _____ Municipal Liaison Staff Date		Endorsed by : _____ PST/PWSO Coordinator Date	

Annex 1

SURVEY FORM
Rural Water Supply Project

A. LOCATION

Barangay : _____ Province : _____
Municipality : _____ Region Number : _____

B. GENERAL INFORMATION

1. Population _____
2. Number of households _____
3. Distance from poblacion _____ kilometers
4. Availability of electricity Yes No
5. Distance from electric line _____ kilometers
6. Power cost per kilowatt hour P _____
7. Availability of public transportation _____
8. Main livelihood of residents Land transport
 Water transport
 Farming
 Industry Others
 Fishing

C. TECHNICAL INFORMATION

1. Are there reliable sources of potable water?
 Yes No

a) For Wells

Well capacity : _____ lps

Casing diameter : _____

Casing depth : _____

Water level from top of well : _____

Location : Within service area
 Outside _____ M. from service area

b) For Springs

Average dry season flow : _____ GPM LPS

Relative elevation of spring

a. _____ ft. m. above service area

b. _____ ft. m. below service area

Location : Within service area
 Outside _____ m. from service area

2. Are there water supply system materials and equipment (pumps, pipes, fittings) which can be donated for this project from other source?

Yes No

For pumps : Type : _____ Power : _____ HP

For pipes : Galvanized Iron PVC
 Others, specify _____

3. Is there an existing water tank that can be used? Yes No

Type : Steel Reinforced Concrete

Capacity : _____ Gallons Cubic Meters

Location: (Please indicate in the map of the project area)

Relative elevation with respect to service area _____ ft. _____ m.

4. Are there other sites where water tanks may be erected? Yes No

Location : (please indicate in the map of the project area)

Relative elevation with respect to service area _____ ft. _____ m.

5. Does the barrio have skilled personnel? Yes No

If yes, how many? Estimated Number

Plumbers : _____
Masons : _____
Carpenters : _____
Others : _____

If no, are there competent contractors near the area?

Plumbing contractor : Yes No
Tank fabricator : Yes No

Are there suppliers of materials (pumps, pipes, fittings) in the municipality?

Yes No

D. FINANCIAL INFORMATION

1. What can the barangay provide as local equity?

Cash : P _____
 Labor : _____ man-days
 Materials : Sand : _____ cu. m.
 Gravel : _____ cu. m.
 Cement : _____ bags
 Others, specify : _____

2. Have the people been informed of the current financing policies for Level II systems, particularly the monthly fees required to repay loan & provide for O & M?

Yes No

3. How much are the people willing to pay per household per month as a water fee?

Below P 6.00 P 10.00 - 15.00 Others
 P 6.00 - 10.00 15.00 - 20.00 Specify : _____

4. Average income per household P _____ per month

E. INSTITUTIONAL INFORMATION

1. Is there an existing association who is ready, willing and able to manage the system

Yes No

If yes, please specify. _____

2. Are people willing to join a water association to operate and manage a water supply system?

Yes No

3. How many households are willing to be members? _____ households.

4. Name at least three (3) leaders of the community who can act as officers of the association, if required.

Name	Address
_____	_____
_____	_____
_____	_____

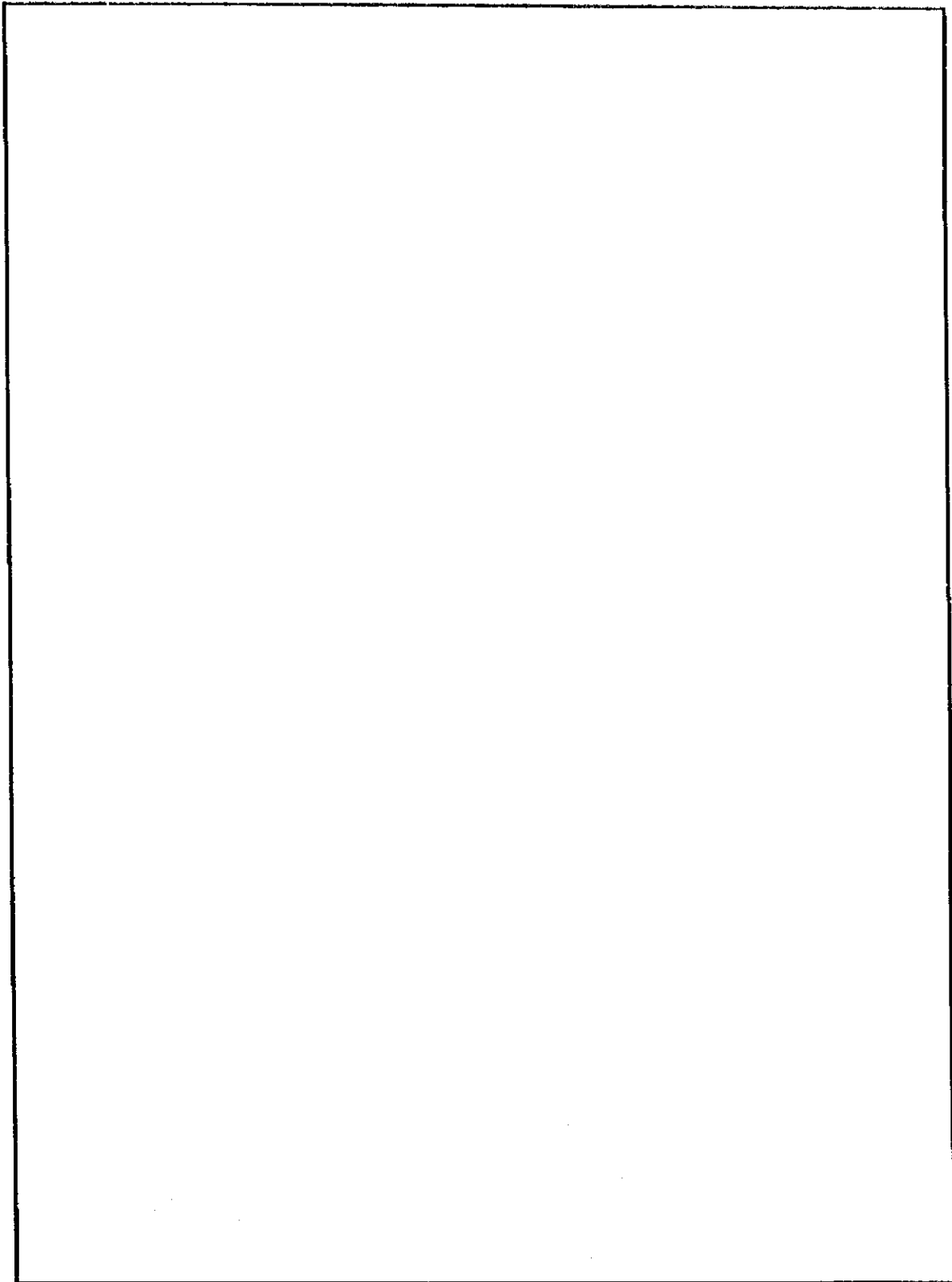
F. MAP OF THE AREA

Please attach map of the area proposed to be served. Indicate location of houses, buildings and other structures to be served including roads, the water source(s) and possible locations of storage tanks. The map should preferably be drawn to scale.

Important : If map cannot be drawn to scale, indicate distance measurements between important points along roads, or possible routes of distribution pipes with households properly indicated. For rolling terrain, indicate elevation differences between measurement points.

G. REMARKS :

Annex 2
MAP OF THE PROJECT AREA
----- Rural Water Supply Project



Annex 3

DESIGN CRITERIA AND BASIC DESIGN DATA
 ----- Rural Water Supply Project

I. Design Criteria

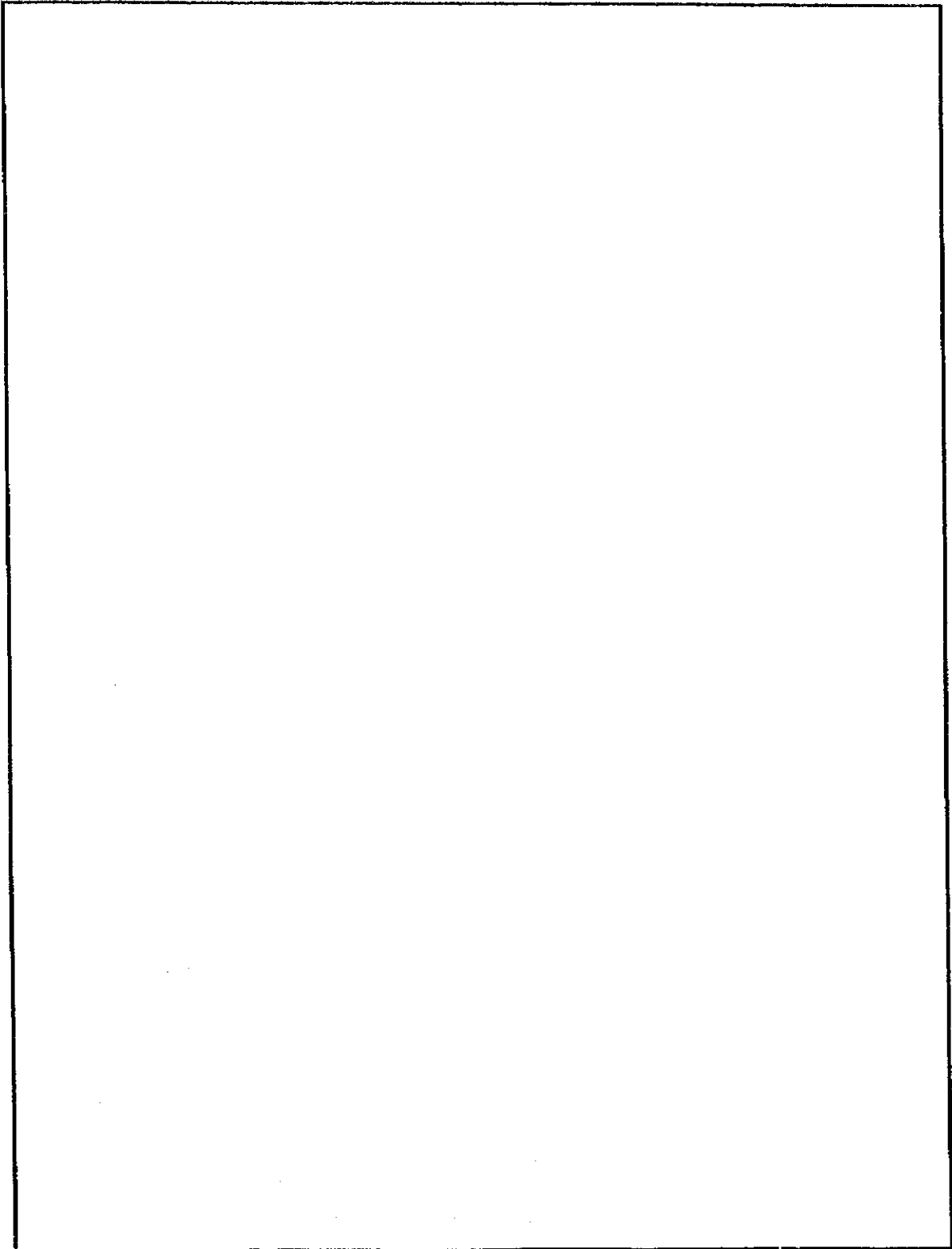
1. Design Period : 5 years
2. Population
 - Annual Growth : 3%
 - Average Household Size : 6 persons/HH
 - Design Population : Present Population x 1.16
3. Per Capita Water Consumption
 - Level II : 60 lpcd
 - Level II with garden : 75 lpcd
 - Level III : 100 lpcd
4. Water Demand
 - Average Day Demand : Design Population X Per Capita Consumption
 - Maximum Day Demand : 1.3 X Average Day Demand
 - Maximum Hour Demand : 2.5 X Average Day Demand
5. Pump Operation
 - Pumping Hours : 8 -15 hours
 - Pumping Rate : Maximum Day Demand/PumpingHrs. = _____
6. Storage Capacity : 1/4 of Average Day Demand
7. System Pressure : 5 - 10 psi at faucet
8. Households Served Per Faucet : 4 - 6 HH

II. Basic Design Data

1. Present Population : _____
2. Design Population (Present Population X 1.16) : _____
3. Average Day Demand: _____ X _____ : _____
 (Per Capita Consumption) (Design Pop.)
4. Maximum Day Demand: 1.3 X _____ : _____
 (Average Day Demand)

Annex 4

SCHEMATIC DIAGRAM OF THE SYSTEM
----- Rural Water Supply Project



Annex 6
DESIGN OF RESERVOIR AND PUMP
 Rural Water Supply Project

A. DESIGN

1. Determine Capacity of Reservoir, (C_r)

$$C_r = 1/4 \times \text{Average Day Demand}$$

$$C_r = 1/4 \times D_d \text{ (LPD)}$$

$$C_r = \text{-----} \text{ liters}$$

2. Determine Minimum Water Elevation, (WL_m)

$$WL_m = \text{total head loss} + \text{Minimum Pressure in Main (Meters)}$$

For Barangay System, Min. Pressure = 5 psi (use 3M.)
 For Poblacion System, Min. Pressure = 10 psi (use 7M.)

$$WL_m = \text{-----} \text{ M.}$$

Note : The bottom of the storage tank should be higher than this elevation.

B. DESIGN OF PUMP

1. Determine Pump Capacity, Q_p (LPS)

$$Q_p = \text{Max. Day Demand (LPD)} / \text{Operating Time (Sec.)}$$

$$Q_p = 78 P_d / T \quad \text{where: } P_d = \text{Design Population}$$

$T = \text{Operating Time in Seconds}$

$$Q_p = \text{-----} \text{ LPS}$$

2. Calculate Total Dynamic Head, TDH (Meters)

$$TDH = \text{Depth of Pumping Level} + \text{by Maximum Reservoir Elevation} + \text{friction loss}$$

$$TDH = \text{-----} \text{ m}$$

3. Calculate Brake Horsepower Requirement :

$$\text{Brake Horsepower} = \frac{Q_p \times TDH}{75 \times \text{Efficiency}}$$

$$\text{Brake Horsepower} = \text{-----} \text{ Hp}$$

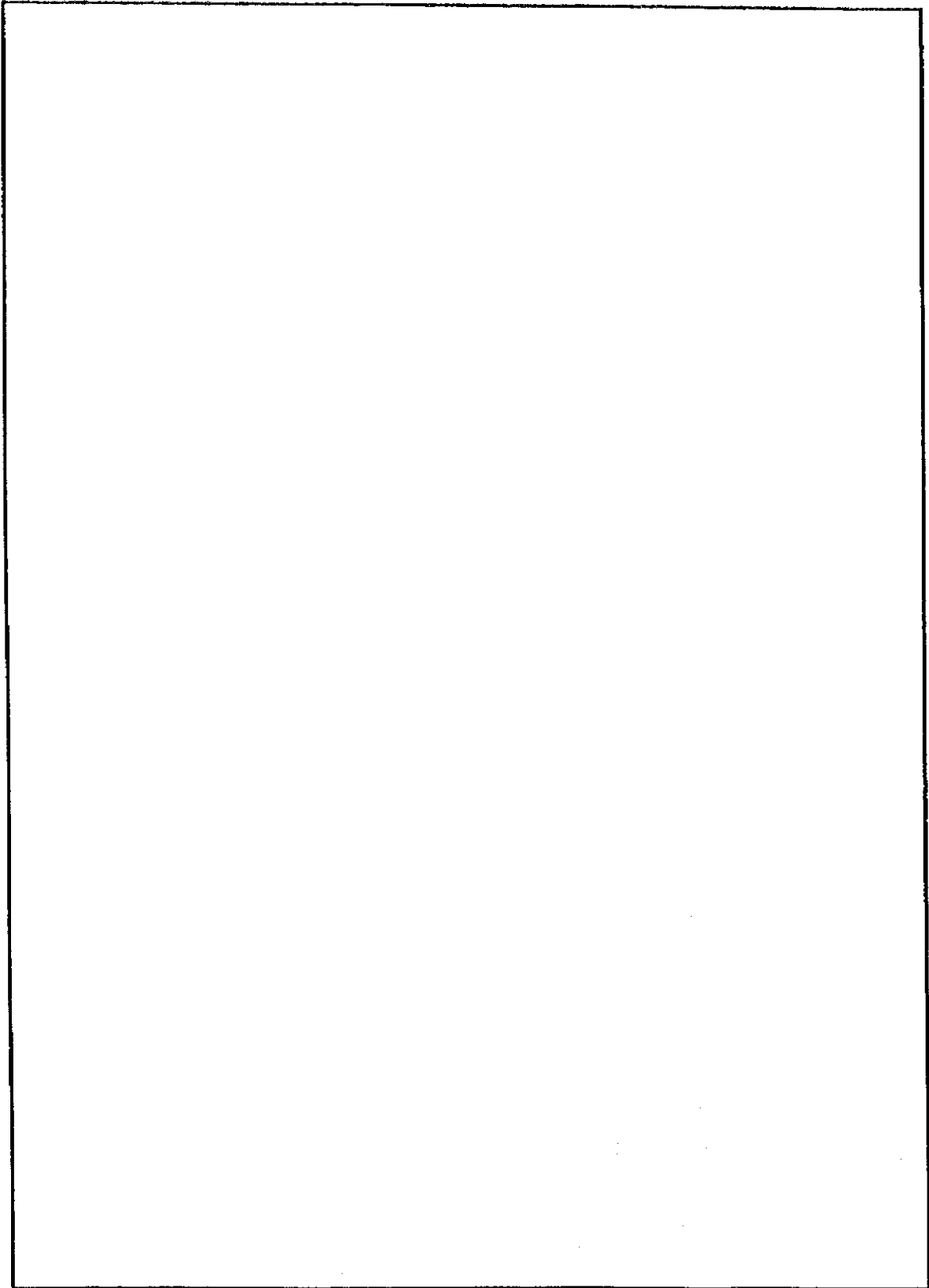
Where :

Efficiency for Centrifugal Pump, 30-60 %

Efficiency for Submersible Pump, 50-60 %

Efficiency for Jetmatic Pump, 20-30 %

Annex 7
DETAILED DESIGN PLAN
Rural Water Supply Project



Annex 11
COST SUMMARY

Rural Water Supply Project

I. ESTIMATED COST OF THE SYSTEM

1. a) Cost of Pipes	P	_____
b) Cost of Fittings		_____
Total Cost of Pipes and Fittings	P	_____
2. Cost of Reservoir		_____
3. Cost of Pump		_____
4. Labor Cost		_____
a) 10% of Pipes & Fittings (For G.I. Pipes)		
b) 25% of Pipes & Fittings (For PVC Pipes)		
5. Cost of Freight and Handling		_____
6. Contingencies 5% (Pipes & Fittings - Labor)		_____
Total Cost of the System	P	_____

For gravity system, omit cost of pump.

II. FINANCIAL DATA

1. Total Cost of the System	P	_____
2. Local Equity		_____
3. Amount of Loan		_____

Annex 12
FINANCIAL ANALYSIS
Rural Water Supply Project

A. RELEVANT DATA

- 1. Pumping Hours : _____ hrs.
- 2. Pump Horsepower : _____ HP
- 3. Cost/KWH : P _____
- 4. Pump Cost : P _____
- 5. Amount of Loan : P _____
- 6. Loan Terms : _____ % (interest per annum)
: _____ years (Repayment Period)
- 7. Number of Households : _____

B. COMPUTATION OF MONTHLY EXPENSES (Omit non-applicable items)

- 1. Operations
 - a. Salaries _____ x _____ = P _____
 - b. Office Supplies _____ x _____ = P _____
 - c. Power _____ x _____ = P _____
 - d. Chemical _____ x _____ = P _____
 - e. Miscellaneous _____ x _____ = P _____

- 2. Asset Replacement
 - a. Pump _____ / _____ = P _____
Life (mos.)
 - b. Pipelines _____ / _____ = P _____
Life (mos.)
 - c. Tank _____ / _____ = P _____
Life (mos.)
 - d. Others _____ / _____ = P _____
Life (mos.)

- 3. Amortization _____ x _____ = P _____
(CRF) (Loan Amt.)

- 4. Maintenance (2% of Capital Equipt.costs annually)
.02 X _____ /12 = P _____

- 6. Total Monthly Expenses = P _____

C. COMPUTATION OF WATER FEE

Monthly Water Fee Per Household :

$$\frac{\text{_____}}{\text{(Total Monthly Expenses)}} \div \frac{\text{_____}}{\text{(No. of HH)}} = P \text{_____}$$

Annex 13
AVAILABILITY OF LOCAL EQUITY

	Item	Amount
I. Cash		P _____

II. Labor

Type of Labor	No. of Workers	No. of Days	Rate Per Day	
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	

III. Materials

Type of Materials	Quantity	Unit Cost	
_____	_____	_____	
_____	_____	_____	
_____	_____	_____	
_____	_____	_____	
_____	_____	_____	

TOTAL P _____

<p>I certify that the items listed above represent the local share of the project cost.</p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Association President Date</p>	<p>Noted by :</p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Municipal Sector Liason Date</p>
--	--

9.5 Community Development

9.5.2 CD Structure and Linkages

Responsibilities and Qualifications of a CO/CD Worker

1. Tasks of a CD/CO Worker

(a) As Facilitator

- Enhances individual and group strengths and helps minimize weaknesses and conflicts;
- Heightens community unity; and,
- Assists individuals and groups to respond to common interests.

(b) As Trainor and Educator

- Discerns educational needs of people;
- Helps in consciousness-raising to enable group or individual capability development;
- Assists leaders in developing new leaders;
- Continually dialogues with people; and,
- Helps develop self-determination among leaders and members.

(c) As Advocate

- Helps analyze and articulate critical issues;
- Assists others to understand and reflect upon these issues; and
- Evokes and provokes relevant discussion and actions.

(d) As Researcher

- Conducts social analysis
- Engages in participatory research with the people as partners;
- Helps create research designs for people's use and interest; and
- Integrates with the people to understand social phenomenon from the people's viewpoint.

(e) As Planner

- Conducts initial analysis of area resources and potentials;
- Assists local group's planning, strategizing and creative action; and
- Helps systematize people's actions to attain desired goals.

(f) As Catalyst

- Initiates discussions and actions regarding critical issues; and
- Monitors and nurtures growth of individuals and groups to facilitate long-term social change for people's welfare.

2. Personal characteristics of a CD/CO Worker

- a) Must possess an innate and genuine love for people, which enables them to share with the people in their desire for change;
- b) Must have a commitment to help people in the desire to participate in changing society. The commitment sustains them and enables them to persevere.
- c) Must have a basic trust in the people, be willing to learn from them, and have faith with them.
- d) Must be adaptable, flexible, able to adjust to people and circumstances and able to move with people when and where they decide to move.
- e) Must be ready to learn and unlearn, be open to self-assessment and accept criticism; be able to drop pre-determined notions and stereotypes; and swallow their pride while remaining resourceful in the process.
- f) Must have patience with people but not with situations so that they can keep the people moving. The people must not be pushed. A CO must keep pace with them.
- g) Must be able to analyze problems, communicate with the people in their own language and work at the people's level. Only then can they start a process of critical awareness.
- h) Must be able to follow the growth of critical awareness by generating with the people appropriate action towards change and transformation of the community.

3. Lifestyle and Method of Work of CD/CO Worker

(a) In Method of Work

- People-oriented, i.e. serving the interest of the people by not insisting on own project proposals.
- Able to work informally among people, and not be overburdened with committee structures.
- Able to protect the community from outside intervention such as inappropriate projects.

(b) In Lifestyle

- Humble, simple and immerse oneself in the life of the community;
- Free of self-interest, which makes commitment unclear and dubious, and expect to reward;
- Able to identify with the people, see themselves as different, and be aware of the limitations of such;
- Open to be transformed by identification with, and involvement in the community;
- Able to develop the internal strength to accept frustrations and loneliness at times.

4. The CD/CO Worker: A Catalyst, Missionary and Visionary

- a) He/she works with people, not for them.
- b) He/she considers people as intelligent and with numerous experiences.
- c) He/she lets the people grow.
- d) He/she builds up the people's cohesiveness.
- e) He/she builds up the people's organization.
- f) He/she believes that people can change and can bring about change in society.

5. Desired Characteristics of a CD/CO Worker

- a) Should have respect for and faith in the people they are working with; believe in the potential power and age-old wisdom of the masses.
- b) Should go to the people as learners, not as teachers; listen more than talk; facilitate more than lead. Should not have the messianic or redeemed complex - but instead believe that it is the masses who will be their own redeemer.
- c) Should try to know the people, their socio-economic, political and cultural situation and problems before starting any program or action.
- d) Should be simple and austere in lifestyle.
- e) Should have the capacity and humility to withdraw as soon as the people are ready to manage their own affairs; aims at becoming dispensable.
- f) Capable of improving other's skills and knowledge.
- g) Is needed in order to maintain the community's interest and participation, as well as, to maintain and accelerate the momentum needed.
- h) Requires that the CO be at least several steps ahead of the community, but having in mind the direction of the community will be going and how to reach the desired goals.

9.5.5 Approaches to CD

Typical CD Work

Community Organizing Handbook for Water Supply and Sanitation

Community organizing for water supply and sanitation projects is aimed at forming user groups through a process that integrates the hardware (technical aspects) and software (social aspects) components of a water supply and sanitation project.

People's participation, which can be gauged against the extent to which they themselves are involved in the decision-making processes, their willingness to stake local resources, (both in cash and in kind) and the extent to which trainings have improved the knowledge, skills and attitudes of the people are some of the indicators of a good community organizing work.

The Community organizing process is developing a partnership with the community. The Community organizer is simply a catalyst in the community's efforts to build their self-confidence to operate, maintain and sustain their water supply and sanitation service.

The CO Framework

The CO Handbook is one of the tools that a community worker may use as a guide in organizing user's groups for community-managed water supply and sanitation facilities. It is presented in three (3) major stages following the community-organizing framework. These stages are a) Formation of Organization; b) Development of Organization; and c) Consolidation of Organization.

The process contains a chronology of activities that starts with the deployment of community organizer and ends up with his/her exit from the community.

Except for steps 9 and 10 of Stage II and Step 20 of Stage III which need not be undertaken for a Level I, all the rest applies to Levels I and II water supply projects. level I water supply projects refer to point source facility catering to a cluster of ten to fifteen households while level II refers to a waterworks that has a distribution system such as multiple tapstands.

The *Formation of Organization* stage covers activities intended to enlist community participation and make community understand the concepts, processes and importance of organizing a group that will become responsible for eliciting maximum participation for WATSAN activities.

The *Development of Organization* stage covers activities intended to build capability of water users' organization, which include trainings and full participation in both technical and social activities. It also includes the CO worker's sharing and transferring of organization development and community organizing technology to the leaders of the water users' association. In this way, the community will be able to increase their capability for self-management.

The *Consolidation of Organization* stage consists of activities intended to "tie loose ends." This is to ensure that at the exit of the CO worker, the water users' association can sustain its operations without an external catalyst.

The last part of the Handbook is a compilation of useful tips in recording the minutes of the community meetings, contents of a spot map, sample tapstand membership form and tapstand

membership list, characteristics of a CO worker and community leaders and others. All these are appended as additional guides to enhance the organization process and facilitate the attainment of the CO objective.

Community Organizer

The community organization worker as a catalyst is one who believes that the people are the main actors in the processes and that his/her role is that of facilitating the community organizing process; improving the skills and knowledge of the community; and that he/she has to withdraw as soon as the people are ready to manage their affairs.

Objectives of the CO Work

The General Objective of the CO work is to form a community-based water user's association that will operate, maintain and sustain their water supply and sanitation facilities.

Stages of CO Work

Each of the three stages of CO work as contained in the framework is distinctly characterized by various activities needed to ensure that the organization will continue to function even after the exit of the CO worker.

Phase I is characterized by the formal entry of the CO worker to the community. This is marked by courtesy call first to the barangay leaders and then to the community. These activities require thorough understanding of the nature of the project.

The CO worker needs various tools to undertake these activities. A chart preferably in the local dialect that explains the concept of the project and the roles of the various stakeholders is very important. The community profile is one tool that also needs to be validated by the community themselves. The profile serves as a CO tool in facilitating community decisions.

Phase II is characterized by a series of trainings intended to provide adult learning processes to the water users' association. This includes practical and workable approaches needed to synchronize activities and provide appropriate mix of technical and social knowledge and skills to the water users.

Phase III begins when the organization is formalized, water system potability is ensured, legal documents are executed and facility is turned-over to the water users' association for their operation and maintenance. This phase ends when the community organizer exits from the community, leaving behind an organization with positive indicators for sustainability.

1. ENTRY STRATEGIES

CO DEPLOYMENT

Objective	: Indorse the CO worker to the community by provincial and municipal level implementors
Expected Result	: CO worker is introduced to the barangay officials and the community
Suggested Strategy	: Community meeting
Facilitator	: Barangay Captain
Co-facilitator	: Municipal Level Implementor

Agenda in the first orientation meeting and courtesy call to barangay council:

- Title of the project
- Objectives
- Stakeholders and their roles, responsibilities and accountabilities
- Funding and counterparting
- Project features or components
- How the project will be executed
- Timetable
- Inputs and outputs (largely trainings)
- Role of the intermediaries (NGOs)
- Solicit/request for CO volunteers to participate in profiling and spot mapping

VALIDATION OF COMMUNITY PROFILE AND SPOT MAPPING

- Objective : To establish socio-economic, political and technical information about community directly or indirectly related to water and sanitation.
- Expected Results : Validated secondary data from the community
- Suggested Strategies :
- Home visits
 - Focus group discussion
 - Visit to RHUs, MPDO, MHO, local school
 - Community meeting

CONTENTS OF THE SPOT MAP

- Natural features (creeks, river, lakes, mountains, water sources)
- Man-made structure (houses, buildings, bridges, roads, schools, cemetery, halls, markets, water system facilities)
- Technical data (distance, north orientation, elevations, scale, date prepared, source of information, persons/agencies involved, names of places, boundaries, legend, index to adjoining sheets, coordinates)

2. PRESENTATION OF VALIDATED PROFILE TO THE COMMUNITY

- Objective : To further enrich and refine data in the profile
- Expected Results :
- Profile validated by the community
 - Surfacing of thoughts on:
 - How project will be implemented on the site
 - How the facility will be designed and constructed
 - How the community perceived their role in the project
 - Solicit counterpart
 - Determine/recommend long list of potential core group members
- Facilitator : CO worker
- Audience : Key informants (farmers, church leaders, teachers, etc.)

3. DEVELOPMENT OF CRITERIA FOR SELECTION OF CORE GROUP

- Objectives : To enlist people interested to work actively that will assist in CO activities

- Expected Results : Core group members elected
- Role and function of core group drawn
 - Adhoc committees formed and function's drawn
 - Committee chairman selected
 - Plan of action done

IDEAL SELECTION CRITERIA FOR CORE GROUP MEMBERS

- Must have the time and commitment to do community development activities in their locality
- Proven leadership skills
- Direct exposure and experience in community development project/activities
- Have some basic knowledge and/or skills in community organizing
- Good moral standing
- No criminal record
- Should be one of the beneficiaries
- With good interpersonal relationship with the community
- Should be literate

ROLES AND FUNCTIONS OF THE WATER CORE GROUP

- Initiates the planning and implementation of action on water related activities
- Preparation of water project feasibility study/design community survey and spot map to further validate the importance of the project to the community at large
- Mobilize community resources specifically: the time, skills and efforts of the people
- Resources of the local agency, i.e., money, technical know-how, equipment, machines
- Disseminate information, keeps the community informed about the status of the water project
- Hears and considers suggestions of people with regards to the appropriate activities of the project
- Facilitates the expansion of water core group into Barangay/Rural Waterworks Association.

COMPOSITION OF THE CORE GROUP

- Technical persons who can be trained on the technical aspects of the project
- Individual who are trusted and respected by community
- Those who have a strong liking to work for people
- Those who have a spirit of volunteerism
- Those who are resourceful
- Individuals who are understanding and patient enough to go with the pace of the community
- Together with the community, they should be able to identify the:
 - Objectives of the group
 - Define roles and responsibilities
 - Clear expectations to members and group as a whole

ADHOC COMMITTEES CO-TERMINUS WITH THE CORE GROUP

- Education and recruitment

and, later, on a more informal manner, as the CO integrates to the community is one of the most critical part of this phase.

As community organizing progresses, the deepening sessions of the CO worker in reinforcing project concepts such as strategies for community initiatives towards addressing key issues affecting their community that are directly or indirectly related to water are reinforcing mechanisms in providing impetus to the development of an informal water users' organization, as infant as a water core group.

6. HUMAN RESOURCE DEVELOPMENT TRAINING

Objective : To build a strong and cohesive team from among the core group members and barangay officials (if appropriate)
Expected Results : Trained core group members on Human Resource Development
Facilitator : CO worker
Co-facilitator : Core group members

7. PRESENTATION OF TECHNICAL DESIGN

Objective : Generate community decision on appropriate technology to be used
Expected Results : Generate community decision on appropriate technology to be used
Suggested Strategy : Community meeting to discuss
- Initial findings on technical feasibility study
- Presentation of technology options
Facilitator : Technical Team

8. FACILITATION ON LEGAL WORKS AND DOCUMENTS

Objective : Prepare necessary legal documents
Expected Results : Legal documents required in WATSAN projects prepared
Facilitator : Committee Chairman
CO-facilitator : CO Worker

LIST OF DOCUMENTS REQUIRED IN IMPLEMENTING WATSAN PROJECTS

- Barangay Resolution desiring to avail of a water facility to be submitted to the LGU
- Building permit of WATSAN facility, from LGU
- Waiver form DENR (if water system components such as the source, tank, pipelines are situated in areas other than private lands) to use the site(s) for community development
- Right of way permit from private land owners, specifically for spring sites and pipeline routes
- Deeds of donation from private landowners for water tank and tapstand sites
- Certificate of water quality source to be developed and tapped, from DOH
- Certificate of water quality produced through the water system facility, from DOH
- Letter of acknowledgment from the municipal mayor endorsing the water system management to the water users' association formed
- Accreditation pertinent papers (needed for the accreditation of RWSAs/BWSAs at the LGU level)

- Water rights
- Water permit
- Drilling permit

9. PRESENTATION OF DRAFT TECHNICAL DESIGN
(Skip This Activity If Level I)

Objective : To inform the community of the results of the feasibility study conducted

Expected Results:

- Location of major components such as well drilling site, transmission and distribution pipelines
- Tanks and tapstands are identified
- Community acceptance of design
- Local counterpart generated

Suggested Strategies:

- Community meeting
- Site visit to proposed structures/facilities' location

INFORMATION TO BE PRESENTED TO THE COMMUNITY

- Role of technical people
- Contents of typical water system technical plan
- Presentation of design specifications and explanation of plan contents /drawings in layman's terms
- Presentation of program of work (POW) , bill of materials and cost estimates
- Validation of data gathered and used in the designing
- Solicit ideas, opinions, comments and preferences
- Come-up with compromises, and if appropriate determine local counterpart

Note: If system is Level II, spring source, dispersed tapstands and dispersed household clusters, technical information is limited to the number of tapstands that can be provided and the approximate location of tapstands relative to the cluster.

10. MOBILIZATION OF COMMITTEE ON DOCUMENTATION
(skip this activity if Level I)

Objective : To facilitate additional legal work requirement for tapstand, pipeline and other major system components

Expected Results : To ensure a formal listing of tapstand membership

Facilitator : Completed legal documentation requirement membership per tapstand known

CO-facilitator : Committee Chairman, Committee on Documentation and Education and Membership

CO-facilitator : CO worker

11. CONFIRMATION OF MEMBERSHIP BY TAPSTAND

Objective : To confirm final membership by tapstand

	:	To undertake information campaign on the importance of grouping and house rules formulation
Expected Results	:	To select tapstand leader
	:	Final listing of membership per tapstand
	:	Formulated tapstand house rules
	:	Tapstand leader selected
Suggested Strategy	:	Undertake meeting per tapstand
Facilitator	:	CO worker
CO-facilitator	:	Chairman, Committee on Education and Recruitment

DISCUSSION POINTS IN FORMULATING TAPSTAND HOUSE RULES

- a. Getting water:
 - How will water be fetched?
 - When will water be fetched?
 - Who can fetch water?
- b. Monitoring
 - List down who fetches and how much volume of water was taken
- c. Water tariff due the specific tapstand
- d. Sanitation around the tapstand and around the cluster
- e. Beautification and physical development in the tapstand site
- f. Financial management regarding water tariffs

12. PRESENTATION OF FINAL TECHNICAL DESIGN

Objective	:	To present and approve the final technical design
Expected Results	:	Finalized counterpart agreement
	:	Construction scheduling developed
Suggested Strategy	:	Meeting among tapstand leaders, core group and barangay council

13. TRAINING ON HYGIENE, SANITATION AND HEALTH CARE

Objective	:	Conduct of training on health and hygiene
Expected Results	:	Awareness on community health aspects
Suggested Strategy	:	Community meeting, or
	:	Meeting by tapstand grouping
Organizer	:	CO Worker, community and rural sanitary inspector
Training Management	:	LGU
Audience	:	Core Group, Barangay Officials, Barangay Health Workers, Rural Sanitary Inspectors, and Barangay Nutrition Scholars

14. SOURCE FOR EXCRETA DISPOSAL MATERIALS AND/OR FACILITIES

Objective	:	To make available to the community facilities for excreta disposal (if conditions and culture warrant)
Expected Results	:	Materials/facilities for excreta disposal constructed individually by members of the community in their households
Suggested Strategy	:	Core group members together with CO worker make representations with LGUs to source materials or facilities
Facilitator	:	Core group members
CO-facilitator	:	CO worker

15. ORGANIZATIONAL MANAGEMENT TRAINING

Organizer : CO and the community
Training Management : LGU
Audience : tapstand leaders, core group and barangay officials

16. PRE-CONSTRUCTION CONFERENCE

Objective : To generate work plan and tasking for the construction activities
Expected Results : Activities and roles identified
: Commitment to participate generated
Suggested Strategy : Hold a community meeting
Facilitator : Technical team
Co-facilitator : CO worker

AGENDA IN THE PRE-CONSTRUCTION CONFERENCE

- Presentation of schedule of work and tasking
- Determine quantities of resources needed
- Labor arrangements
- Salaries/wages, if any that will be incurred
- Mobilization of committees
- Arrangement on materials storage

17. MOBILIZATION FOR DELIVERY OF MATERIALS

Objective : To ensure that materials delivered at the community are all accounted for
Expected Results : Materials delivered all accounted for and in accordance to the agreed upon specifications in the technical design
Suggested Strategy : Specific committee to handle delivery, and storage of materials , and, if need be, disposition of materials
Facilitator : Committee to be agreed upon by the core group
Co-facilitator : CO worker

18. ACTION PLANNING FOR CONSTRUCTION

Objective : To spell out what to expect during the construction processes
Expected Results : Smooth implementation of construction activities
Facilitator : CO worker
Co-facilitator : Technical Team
Suggested Strategy : Core group meeting

STEPS TO BE UNDERTAKEN:

- Identify activities related to construction
- Define activity schedule and resources required
- Identify the type of manpower skills required per activity
- Monitoring and documentation of major water system components
- Progress reporting, evaluation and action planning

- Monitoring and documentation on construction of major water system components
- Repeat cycle until completion

19. DEVELOPMENT OF EXIT PLAN

Objective	:	To plan for the transfer of responsibility from CO worker to core group members
Expected Results	:	Core group informed of activities ahead and the expected time of withdrawal of the CO worker
	:	An exit plan containing task list and specific person responsible
	:	Organizational development program developed
Suggested Strategy	:	Core group meeting
Facilitator	:	CO worker
Co-facilitator	:	Technical Team
Audience	:	Community members

At the end of the Development of Organization Phase, the following milestone must have been achieved:

- Basic organizational development training such as value formation, leadership and team building and sanitation, health care and hygiene education must be done
- CO exit plan jointly developed by the CO together with the community
- All legal documents completed
- Pre-construction conference done
- Materials for construction delivered and accepted by the community
- Organizational strengthening such as involvement of a greater number of community members participating in mobilization activities and increased awareness on key issues through information exchange

The success of the phase rests on the extent the community had participated in the activities and learned from the processes as inputs to the community's capability for self-management. On the other hand, one of the most crucial factors to participation rests on the depth and broadness of their understanding of the project concept, features, processes, stakeholders, tasks, and responsibilities coupled with the need for water supply facility, a condition validated in the first orientation meeting done by the CO upon entry to the community.

The inputs that will be provided by the CO and the technical team will provide the necessary honing skills for the core group and tapstand leaders to have the confidence to accept more challenges in the next phase. These challenges are contained in the Exit Plan, which was formulated by the local stakeholders. The Plan will be implemented in Phase III stage to signal the weaning process of the community from the CO worker.

20. PRESENTATION, COMPARISON & COLLATION OF TAPSTAND HOUSERULES (skip this activity if Level I)

Objectives	:	Collate similar houserules formulated in the previous activity
Expected Results	:	Collated houserules
	:	Identified houserules appropriate for by-laws
Suggested Strategy	:	Meeting of tapstand leaders
Facilitator	:	CO worker
Co-facilitator	:	Core Group Member

21. DRAFTING OF CONSTITUTION AND BY-LAWS

- Objective : To develop a set of policies and by-laws that will govern the operation of the organization
- Expected Results : Constitution and by-laws ready for ratification
- Suggested Strategy : Meeting of core group and tapstand leaders

22. RATIFICATION OF CONSTITUTION, BY-LAWS AND POLICIES

- Facilitator : CO Worker
- Co-facilitator : Core Group Member
- Expected Results : Constitution ratified
- : Officers elected

23. FACILITY/SYSTEM TEST RUN

The community participates in ocular operation and test run of facility installed

- Facilitator : Technical Team

24. WATER QUALITY TEST

- Objective : To ensure potability of water from facility
- Expected Result : Water facility is to provide potable water to community
- Suggested Strategy : Collect water sample from tapstand
- : Submit sample to DOH for test and certification

25. TURN-OVER OF FACILITY/SYSTEM

Officers elected organize and manage facility turnover ceremony

26. OPERATION, MAINTENANCE AND REPAIR TRAINING

- Trainer : Technical team
- Trainees : Community-appointed Plumber, Meter Reader (if there is a meter installed), Tapstand leader and RWSA/BWSA officers

27. FINANCIAL MANAGEMENT TRAINING

- Trainer : NGO, LGU or Water District
- Trainees : Bookkeeper, Tapstand Leader and RWSA/BWSA officer

28. RWSA/BWSA REGISTRATION AND ACCREDITATION

- Facilitator : RWSA/BWSA officer
- Co-facilitator : CO worker

Registration of BWSA/RWSA to appropriate government agencies is done. Options on where to register shall be presented and decided upon by the organization.

Possible Options:

In the absence of a clear national policy on B/RWSA registration, the following Registering Agencies could be presented as options:

- a. Securities and Exchange Commission
- b. Bureau of Rural Workers
- c. Local Waterworks Utilities Administration
- d. Department of Social Welfare and Development
- e. Cooperatives Development Authority

Accreditation of BWSA/RWSA is done through the municipal local government unit.

29. FORMAL EXIT OF THE CO WORKER

Facilitator	:	RWSA Officer
Co-facilitator	:	CO worker
Suggested Strategy	:	Hold a community meeting
Agenda	:	Assessment of CO Exit Plan
	:	Planning for the operation and management of water facility
	:	Scheduling of CO visits
	:	Scheduling of RWSA/BWSA and CO formal linking with other organizations and agencies
	:	Formal turn-over of CO responsibility to RWSA/BWSA

At the end of the Consolidation Phase, the following milestones are achieved:

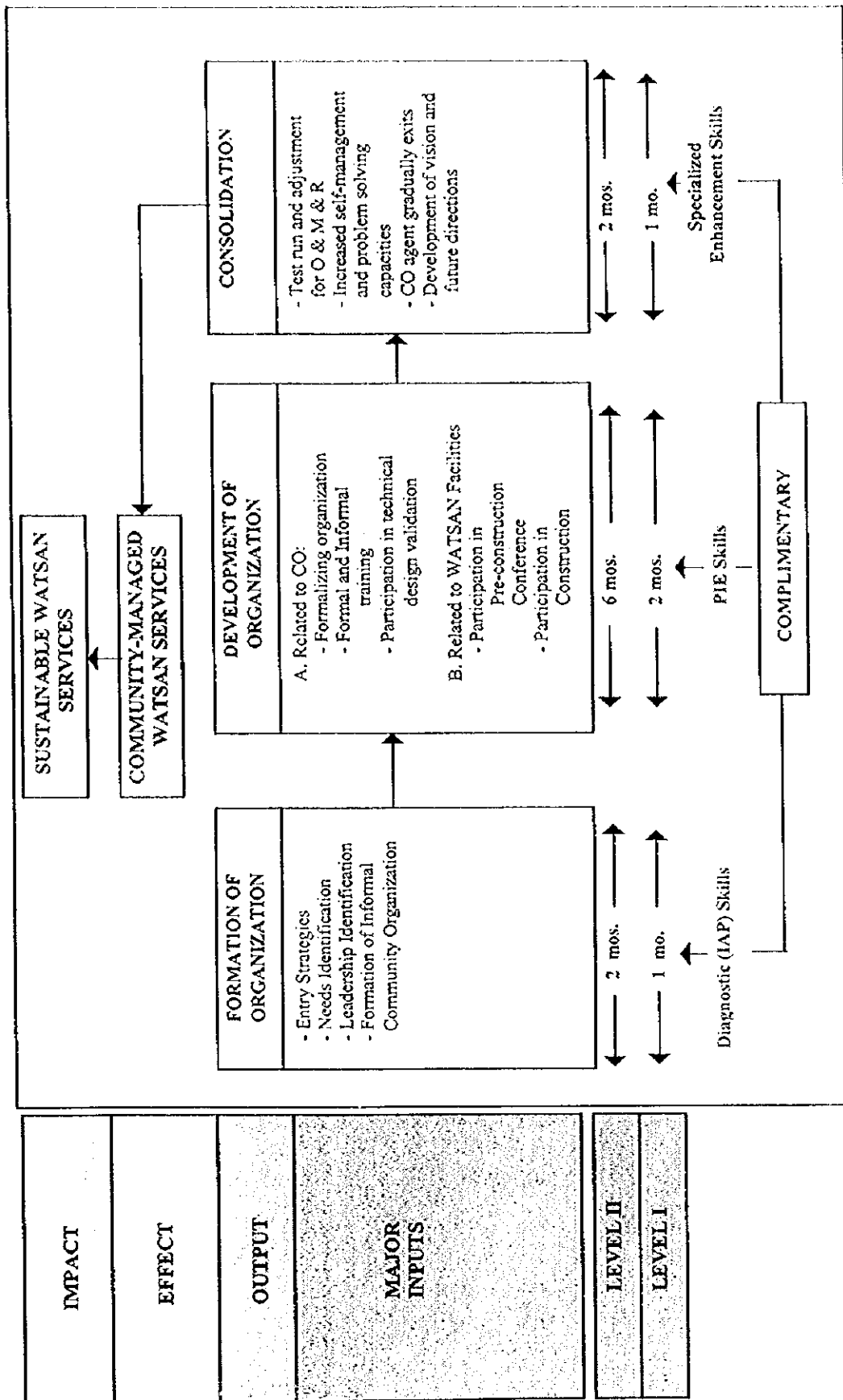
- Facility is turned-over to RWSA/BWSA and is functioning as intended and has its set of officers, constitution and by-laws and policies
- Plan for operation, maintenance and repair of system is installed

At the end of the community organizing process, the degree of capability of RWSA/BWSA in the operation and maintenance of water supply facility and maintaining their organizational health can be gauged on the extent of participation of the members in resolving problems and making decisions. The extent of focus of team building and leadership inputs is crucial in how the members of the RWSAs/BWSAs are willing to make and allow some compromises among each other. On the other hand, the technical soundness of the design and execution of the construction ensures the long-term sustainability of the system.

By this time, the CO has exited but maintains monitoring visits until he/she is fully confident that the organization is strong enough to take decisions, plan and implement their WATSAN related activities and knows where to access support (in terms of financial, institutional and technical) when needed.

*Source: Water Supply and Sanitation Program Management Office
Department of the Interior and Local Government*

FRAMEWORK FOR COMMUNITY ORGANIZING



IAP - Identification, Analysis and Privatization
 PIE - Planning, Implementation and Evaluation



10 COST ESTIMATES FOR FUTURE SECTOR DEVELOPMENT

10.2 Assumption for Cost Estimates

10.2.1 Unit Construction Cost

(1) Calculation method

The base information in previous PW4SP, such as bill of quantities and unit cost of respective component facilities was fully utilized, which was referred to the standards of relevant sector agencies. Escalation rates experienced between 1995 and 1997 in terms of major construction materials and equipment rental were studied using NSO statistics (wholesale price index). Market prices of these items were also canvassed to compare with calculated prices in 1997 from those in 1995 in application of the escalation rates.

In general, escalated prices meet canvassed prices in most of the materials. Escalation rates between 1995 and 1997 were employed in round figures. Some of them (water closet, etc.) were, however, replaced by current price due to considerable increase in the last two years.

The Table 10.2.1 shows the prices of the major materials by facility.

Table 10.2.1 Price of Major Materials by Facility

	Water Supply			Sanitation			Projection by major materials			Canvassed/collected price			Remarks Compared with (2), (3)
	L-I	L-II	L-III	Flush type	VIP/Pit	NSO wholesale price index			1995	(1) 1997	DPWH (2)	(3) CIA	
						1995	1997	Escalation					
1. Sand, stone, gravel Sand Gravel	*	*	*	*	*	311.6	343.5	0.050	304	335	330	350	Almost same with (2),(3)
2. Cement	*	*	*	*	*	197.4	200.1	0.007	117	119	126	105	- do -
3. Fuel and Lubricant	*	*	*			601.6	694.0	0.074	1,100	1,269	1,306		- do -
4. Metal pipe 100m/m x 3m, casing 100m/m x 3m, screen	*	*	*			208.7	211.5	0.007	2,625	2,660	2,763		Price of casing is almost same with (2), screen is 20% lower than (2)
5. PVC pipe 63m/m pipe w/socket 1 1/2" elbow	*	*	*			199.2	221.1	0.054	813	902	882	715	Price of PVC pipe is almost same with (2) and/or 25% higher than (3)
6. Reinforcing steel 12m/m x 6m 10m/m x 6m	*	*	*	*	*	201.4	207.4	0.015	68	70		70	Same with (3)
7. Lumber				*	*	268.5	277.4	0.016	49	50		49	
8. Paint Enamel, QDE				*	*	128.0	132.8	0.019	266	276		275	Same with (3)
9. Machinery and equipment	*		*			254.8	254.8	0.000					

L-I: Deep well/shallow well, L-II: Major materials are same as those of L-I spring development.

ST: School toilet, PT: Public toilet, Flush type: Flush water sealed w/septic tank and Pour flush w/ double latrine.

CIA: Construction Industry Authority of the Philippines

Table 10.2.2 (a) Unit Cost of Level I (Deep Well - 40m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,600
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	11	pcs.	2,894	31,834
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,755	9,510
2. Labor, Fuel, Lubricant and others				0
Well Drilling for 40 m depth at 200mm borehole	40	m	1,212	48,480
3. Freight Cost (11% of Materials)		L.S.		4,878
Sub-Total of B				97,699
C. Well Development		L.S.		5,500
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,922	9,922
(2) 63mm x 6m GI Pipe with coupling	6	pcs.	1,880	11,280
(3) #10 Sieved Gravel	0.7	cu.m	959	671
(4) Coarse Sand	1	cu.m	335	335
(5) Cement for Sanitary Seal	4	bags	128	512
(6) Pump Base and Platform			0	0
1) Cement	4	bags	128	512
2) Gravel	2	cu.m	424	848
3) Sand	1	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	275	275
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	49	294
6) Nail	1	kg.	35	35
Sub-Total of D-1				25,019
2. Labor (40% of D-1)				10,008
3. Freight Cost (11% of Materials)		L.S.		2,752
Sub-Total of D				37,779
E. Indirect Cost				
Profit (10% of A, B, C & D)				14,458
VAT (10% of Profit & Labor)				7,295
Sub-Total of E				21,753
Total of Construction Cost (A+B+C+D+E)				166,331
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,300
2. Construction Supervision		L.S.		2,200
3. Water Quality Analysis		L.S.		1,244
Sub-Total of F				6,744
GRAND TOTAL				173,075
SAY				173,100

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.2 (b) Unit Cost of Level I (Deep Well, Natural Gravel Pack - 40m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,600
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	11	pcs.	2,894	31,834
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,755	9,510
2. Labor, Fuel, Lubricant and others				0
Well Drilling for 40 m depth at 150mm borehole	40	m	935	37,400
3. Freight Cost (11% of Materials)		L.S.		4,878
Sub-Total of B				86,619
C. Well Development		L.S.		5,500
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,922	9,922
(2) 63mm x 6m GI Pipe with coupling	6	pcs.	1,880	11,280
(3) #10 Sieved Gravel	0	cu.m	959	0
(4) Coarse Sand	1	cu.m	335	335
(5) Cement for Sanitary Seal	4	bags	128	512
(6) Pump Base and Platform			0	0
1) Cement	4	bags	128	512
2) Gravel	2	cu.m	424	848
3) Sand	1	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	275	275
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	49	294
6) Nail	1	kg.	35	35
Sub-Total of D-1				24,348
2. Labor (40% of D-1.)				9,739
3. Freight Cost (11% of Materials)		L.S.		2,678
Sub-Total of D				36,765
E. Indirect Cost				
Profit (10% of A, B, C & D)				13,248
VAT (10% of Profit & Labor)				6,039
Sub-Total of E				19,287
Total of Construction Cost (A+B+C+D+E)				151,771
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,300
2. Construction Supervision		L.S.		2,200
3. Water Quality Analysis		L.S.		1,244
Sub-Total of F				6,744
GRAND TOTAL				158,515
SAY				158,500

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.3 (a) Unit Cost of Level I (Deep Well - 80m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,600
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	24	pcs.	2,894	69,456
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,755	9,510
2. Labor, Fuel, Lubricant and others				0
Well Drilling for 80 m depth at 200mm borehole	80	m	1,212	96,960
3. Freight Cost (11% of Materials)		L.S.		9,016
Sub-Total of B				187,939
C. Well Development		L.S.		5,500
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,922	9,922
(2) 63mm x 6m GI Pipe with coupling	8	pcs.	1,880	15,040
(3) #10 Sieved Gravel	1.6	cu.m	959	1,534
(4) Coarse Sand	1	cu.m	335	335
(5) Cement for Sanitary Seal	4	bags	128	512
(6) Pump Base and Platform			0	0
1) Cement	4	bags	128	512
2) Gravel	2	cu.m	424	848
3) Sand	1	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	275	275
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	49	294
6) Nail	1	kg.	35	35
Sub-Total of D-1				29,642
2. Labor (40% of D-1.)				11,857
3. Freight Cost (11% of Materials)		L.S.		3,261
Sub-Total of D				44,760
E. Indirect Cost				
Profit (10% of A, B, C and D)				24,180
VAT (10% of Profit & Labor)				6,333
Sub-Total of E				30,513
Total of Construction Cost (A+B+C+D+E)				272,312
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,300
2. Construction Supervision		L.S.		2,200
3. Water Quality Analysis		L.S.		1,244
Sub-Total of F				6,744
GRAND TOTAL				279,056
SAY				279,100

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.3 (b) Unit Cost of Level I (Deep Well, Natural Gravel Pack - 80m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,600
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	24	pcs.	2,894	69,456
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,755	9,510
2. Labor, Fuel, Lubricant and others				0
Well Drilling for 120 m depth at 150mm borehole	120	m	935	112,200
3. Freight Cost (11% of Materials)		L.S.		9,016
Sub-Total of B				203,179
C. Well Development		L.S.		5,500
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,922	9,922
(2) 63mm x 6m GI Pipe with coupling	8	pcs.	1,880	15,040
(3) #10 Sieved Gravel	0	cu.m	959	0
(4) Coarse Sand	1	cu.m	335	335
(5) Cement for Sanitary Seal	4	bags	128	512
(6) Pump Base and Platform				
1) Cement	4	bags	128	512
2) Gravel	2	cu.m	424	848
3) Sand	1	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	275	275
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	49	294
6) Nail	1	kg.	35	35
Sub-Total of D-1				28,108
2. Labor (40% of D-1)				11,243
3. Freight Cost (11% of Materials)		L.S.		3,092
Sub-Total of D				42,443
E. Indirect Cost				
Profit (10% of A, B, C and D)				25,472
VAT (10% of Profit & Labor)				6,309
Sub-Total of E				31,781
Total of Construction Cost (A+B+C+D+E)				286,503
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,300
2. Construction Supervision		L.S.		2,200
3. Water Quality Analysis		L.S.		1,244
Sub-Total of F				6,744
GRAND TOTAL				293,247
SAY				293,200

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.4 (a) Unit Cost of Level I (Deep Well - 120m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,600
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	37	pcs.	2,894	107,078
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,755	9,510
2. Labor, Fuel, Lubricant and others				0
Well Drilling for 120 m depth at 200mm borehole	120	m	1,212	145,440
3. Freight Cost (11% of Materials)		L.S.		13,154
Sub-Total of B				278,179
C. Well Development		L.S.		5,500
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,922	9,922
(2) 63mm x 6m GI Pipe with coupling	15	pcs.	1,880	28,200
(3) #10 Sieved Gravel	2.5	cu.m	959	2,398
(4) Coarse Sand	1	cu.m	335	335
(5) Cement for Sanitary Seal	4	bags	128	512
(6) Pump Base and Platform				0
1) Cement	4	bags	128	512
2) Gravel	2	cu.m	424	848
3) Sand	1	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	275	275
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	49	294
6) Nail	1	kg.	35	35
Sub-Total of D-1				43,666
2. Labor (40% of D-1.)				17,466
3. Freight Cost (11% of Materials)		L.S.		4,803
Sub-Total of D				65,935
E. Indirect Cost				
Profit (10% of A, B, C and D)				35,321
VAT (10% of Profit & Labor)				8,850
Sub-Total of E				44,171
Total of Construction Cost (A+B+C+D+E)				397,385
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,300
2. Construction Supervision		L.S.		2,200
3. Water Quality Analysis		L.S.		1,244
Sub-Total of F				6,744
GRAND TOTAL				404,129
SAY				404,100

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.4 (b) Unit Cost of Level I (Deep Well, Natural Gravel Pack - 120m Depth)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,600
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 100mm x 3m Steel Casing with coupling	37	pcs.	2,894	107,078
(2) 100mm x 3m Steel Casing with one end closed	1	pc.	2,997	2,997
(3) 100mm x 3m Low Carbon Steel Screen	2	pcs.	4,755	9,510
2. Labor, Fuel, Lubricant and others				0
Well Drilling for 120 m depth at 150mm borehole	120	m	935	112,200
3. Freight Cost (11% of Materials)		L.S.		13,154
Sub-Total of B				244,939
C. Well Development		L.S.		5,500
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) Improved Deep Well Cylinder Pump (Malawi Type)	1	set	9,922	9,922
(2) 63mm x 6m GI Pipe with coupling	15	pcs.	1,880	28,200
(3) #10 Sieved Gravel	0.0	cu.m	959	0
(4) Coarse Sand	1	cu.m	335	335
(5) Cement for Sanitary Seal	4	bags	128	512
(6) Pump Base and Platform			0	0
1) Cement	4	bags	128	512
2) Gravel	2	cu.m	424	848
3) Sand	1	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	275	275
5) Form Lumber (50mm x 75mm x 1,800mm)	6	pcs.	49	294
6) Nail	1	kg.	35	35
Sub-Total of D-1				41,268
2. Labor (40% of D-1.)				16,507
3. Freight Cost (11% of Materials)		L.S.		4,539
Sub-Total of D				62,314
E. Indirect Cost				
Profit (10% of A, B, C and D)				31,635
VAT (10% of Profit & Labor)				8,241
Sub-Total of E				39,876
Total of Construction Cost (A+B+C+D+E)				356,229
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		3,300
2. Construction Supervision		L.S.		2,200
3. Water Quality Analysis		L.S.		1,244
Sub-Total of F				6,744
GRAND TOTAL				362,973
SAY				363,000

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.6 Unit Cost of Level 1 (Shallow Well - 18m Depth)

(Cost: Pесо)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		1,200
B. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 63mm x 6m PVC Pipe with socket	2	pcs.	896	1,792
(2) 63mm x 3m PVC Pipe with plug	1	pc.	452	452
(3) 63mm PVC Socket	1	pc.	99	99
(4) 63mm x 3m PVC Screen	1	pc.	1,433	1,433
2. Labor, Fuel, Lubricant and others				
Well Drilling for 18 m depth at 150mm borehole	18	m	573	10,314
3. Freight Cost (11% of Materials)		L.S.		415
Sub-Total of B				14,505
C. Well Development		L.S.		600
D. Gravel Packing, Installation of Handpump and Construction of Platform				
1. Materials				
(1) 50mm Jetmatic Handpump	1	set	2,623	2,623
(2) 50mm x 1m GI Pipe (Sch. 40)	1	pc.	110	110
(3) #10 Sieved Gravel	0.1	cu.m	959	96
(4) Coarse Sand	0.07	cu.m	335	23
(5) Cement for Sanitary Seal	1	bag	128	128
(6) Pump Base and Platform				
1) Cement	4	bags	128	512
2) Gravel	1	cu.m	424	424
3) Sand	1	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1	pc.	275	275
5) Form Lumber (50mm x 75mm x 1,800 mm)	1	pc.	49	49
6) Nail	1	kg.	35	35
Sub-Total of D-1				4,610
2. Labor (40% of D-1.)				1,844
3. Freight Cost (11% of Materials)		L.S.		507
Sub-Total of D				6,961
E. Indirect Cost				
Profit (10% of A, B, C & D)				2,327
VAT (10% of Profit & Labor)				1,449
Sub-Total of E				3,776
Total of Construction Cost (A+B+C+D+E)				27,042
F. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		2,200
2. Construction Supervision		L.S.		1,650
3. Water Quality Analysis		L.S.		1,244
Sub-Total of F				5,094
GRAND TOTAL				32,136
SAY				32,100

Note: L.S. - Lamp Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.7 Unit Cost of Level I (Spring Development)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,600
B. Construction of Spring Box				
1. Materials		L.S.		30,700
2. Labor (35% of 1.)		L.S.		10,745
3. Freight Cost (11% of Materials)		L.S.		3,377
Sub-Total of B				44,822
C. Installation of Pipelines & Fittings				
1. Transmission Main				
(1) Materials				
1) 25mm dia. GI Pipe	330	pcs.	400	132,000
2) 25mm dia. Tee	1	no.	163	163
3) 25mm dia. Coupling	26	cans	23	598
4) 25mm dia. Elbow (90 deg.)	3	nos.	23	69
5) 25mm dia. Elbow (45 deg.)	1	pc.	23	23
6) 25mm dia. Gate Valve	2	pcs.	250	500
7) 13mm dia. x 1m Stand Pipe	1	pc.	103	103
8) 13mm x 25mm GI Nipple	1	pc.	72	72
9) 13mm dia. Union Patente	3	pcs.	35	105
10) 25mm x 13mm dia. Reducing Socket	2	pcs.	72	144
11) 13mm dia. GI Elbow (90 deg.)	2	pcs.	14	28
12) 25mm x 13mm dia. Socket Adaptor	2	pcs.	72	144
13) 13mm dia. GI Gate Valve	2	pcs.	253	506
14) 13mm dia. Brass Faucet	2	pcs.	45	90
Sub-Total of Materials				134,455
(2) Labor (35% of Material Cost)		L.S.		47,059
(3) Freight Cost (11% of Materials)		L.S.		14,790
Sub-Total of C				196,304
D. Indirect Cost				
1. Transmission Main				
(1) Profit (10% of C)				19,630
(2) VAT (10% of Profit and Labor)				6,669
2. Source Facilities				
(1) Profit (10% of A, B)				4,842
(2) VAT (10% of Profit and Labor)				1,559
Sub-Total of D				32,700
Total Construction Cost (A+B+C+D)				277,426
E. Estimated Government Expenses				
1. Preliminary & Detailed Engineering and RWSA Formation				2,200
2. Supervision				13,200
3. Water Quality Analysis				1,244
Sub-Total of E				16,644
GRAND TOTAL				294,070
SAY				294,100

Note: L.S. - Lump Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.8 Unit Cost of Level II (600 Service Population)

				(Cost: Peso)
Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		3,300
B. Construction of Spring Box				
1. Materials		L.S.		39,900
2. Labor (35% of 1.)		L.S.		13,965
3. Freight Cost (11% of Materials)		L.S.		4,389
Sub-Total of B				58,254
C. Installation of Pipelines & Fittings				
1. Transmission Main				
(1) Materials				
1) 63mm dia. PVC Pipe (Class 12.5 with pusher type socket)	330	pcs.	896	295,680
2) 63mm dia. Tee	1	no.	97	97
3) Solvent Cement	26	cans	50	1,300
4) 63mm dia. x 150mm Nipple	3	nos.	149	447
5) 63mm dia. Union Patente	1	pc.	190	190
6) 63mm dia. x 50mm dia. Reducing Socket	2	pes.	115	230
7) 63mm dia. Elbow (90 deg.)	1	pc.	83	83
8) 63mm dia. Elbow (45 deg.)	1	pc.	82	82
9) 63mm dia. Gate Valve	3	pes.	841	2,523
Sub-Total of Materials				300,632
(2) Labor (35% of Material Cost)		L.S.		105,221
(3) Freight Cost (11% of Materials)		L.S.		33,070
Sub-Total of Transmission Main				438,923
2. Distribution Pipeline				
(1) Materials				
1) 50mm dia. PVC Pipe (Class 12.5 with pusher type socket)	20	pcs.	496	9,920
2) 38mm dia. PVC Pipe (Class 12.5 with pusher type socket)	30	pes.	330	9,900
3) 20mm dia. PVC Pipe (Class 40 with pusher type socket)	10	pes.	110	1,100
4) 13mm dia. x 1 m Stand Pipe	10	pes.	103	1,030
5) Solvent Cement	4	cans	50	200
6) Fittings				
a. 50mm dia. x 150mm PVC Nipple	3	pes.	137	411
b. 32mm dia. x 150mm PVC Nipple	3	pes.	83	249
c. 13mm dia. x 150mm GI Nipple	40	pes.	27	1,080
d. 50mm dia. Union Patente	1	pes.	179	179
e. 32mm dia. Union Patente	2	pes.	78	156
f. 13mm dia. Union Patente	10	pes.	27	270
g. 50mm dia. x 32mm dia. Reducing Socket	6	pes.	99	594
h. 32mm dia. x 20mm dia. Reducing Socket	10	pes.	77	770
i. 20mm dia. x 13mm dia. Reducing Socket	10	pes.	60	600
j. 50mm dia. PVC Elbow (90 deg.)	2	pes.	74	148
k. 13mm dia. GI Elbow (90 deg.)	20	pes.	14	280
l. 20mm dia. x 13mm dia. Socket Adaptor	10	pes.	45	450
m. 50mm dia. GI Gate Valve	2	pes.	739	1,478
n. 32mm dia. GI Gate Valve	2	pes.	418	836
o. 13mm dia. GI Gate Valve	24	pes.	253	6,072
p. 13mm dia. Brass Faucet	24	pes.	45	1,080
q. 50mm dia. Tee	4	pes.	143	572
r. 32mm dia. Tee	6	pes.	121	726
s. Water Meter	24	pes.	826	19,824
t. Water Meter Box	24	pes.	1,212	29,088
Sub-Total of Materials				87,013
(2) Labor (35% of Material Cost)				30,455
(3) Freight Cost (11% of Materials)		L.S.		9,571
Sub-Total of Distribution Pipeline				127,039
Sub-Total of C				565,962

Table 10.2.8 Unit Cost of Level II (600 Service Population)

Sheet-2

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
D. Indirect Cost				
1. Transmission Main				
(1) Profit (10% of C-1)				43,892
(2) VAT (10% of Profit and Labor)				14,911
2. Source Facilities and Distribution Pipeline				
(1) Profit (10% of A, B, C-2)				18,859
(2) VAT (10% of Profit and Labor)				6,328
Sub-Total of D				83,990
Total Construction Cost (A+B+C+D)				711,506
E. Estimated Government Expenses				
1. Preliminary & Detailed Engineering and RWSA Formation				
2. Supervision				
3. Water Quality Analysis				
Sub-Total of E				16,644
Total Estimated Cost				728,150
Unit Cost per Person Served				1,214
Unit Cost per Person Served				1,220

Note: L.S. - Lamp Sum

Source: DPWH standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.9 Unit Cost of Level III (5,000 Service Population)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		330,000
B. Spring/Deep Well Source Development and Storage				
1. Spring Development/Deep Well	1	No.	1,770,000	1,770,000
2. Intake Box/Deep Well Pump	1	No.	632,000	632,000
3. Chlorinator House & Equipment	1	L.S.		480,000
4. Storage Tank (250 cu.m)	1	No.	1,200,000	1,200,000
Sub-Total of B				4,082,000
C. Transmission Main				
1. 160mm dia.	500	L.M.	1,234	617,000
Sub-Total of C				617,000
D. Distribution Main				
1. 160mm dia.	1,000	L.M.	1,234	1,234,000
2. 110mm dia.	3,000	L.M.	1,019	3,057,000
3. 90mm dia.	3,000	L.M.	639	1,917,000
4. 75mm dia.	5,000	L.M.	595	2,975,000
Sub-Total of D				9,183,000
E. Service Connections	1,000	Nos.	2,138	2,138,000
F. Miscellaneous				
1. Vehicle	1	No.	606,000	606,000
2. Office & Workshop Bldg.	1	No.	606,000	606,000
3. Office Equipment		L.S.		110,000
4. Tools and Spare Parts		L.S.		110,000
Sub-Total of F				1,432,000
Total Direct Cost (A+B+C+D+E+F)				17,782,000
G. Indirect Cost (25% of Direct Cost)				4,445,500
Total Estimated Cost				22,227,500
Unit Cost per Person Served				
For New Construction				4,446
For Expansion of Existing System (Exclude F.)				4,500
				4,088
				4,100

Note: L.S. - Lump Sum

Cost of spring development includes additional transmission, but it shall be confirmed by survey in the implementation stage.

Source: LWUA standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.10 Unit Cost of Level III (10,000 Service Population)

				(Cost: Peso)	
Description	Quantity	Unit	Unit Cost	Cost	
A. Mobilization/Demobilization		L.S.		330,000	
B. Spring/Deep Well Source Development and Storage					
1. Spring Development/Deep Well	1	No.	1,770,000	1,770,000	
2. Intake Box/Deep Well Pump	1	No.	632,000	632,000	
3. Chlorinator House & Equipment	1	L.S.		480,000	
4. Storage Tank (250 cu m)	1	No.	1,200,000	1,200,000	
Sub-Total of B				4,082,000	
C. Transmission Main					
1. 160mm dia	500	L.M.	1,234	617,000	
Sub-Total of C				617,000	
D. Distribution Main					
1. 160mm dia	2,000	L.M.	1,234	2,468,000	
2. 110mm dia	5,000	L.M.	1,019	5,095,000	
3. 90mm dia	6,000	L.M.	639	3,834,000	
4. 75mm dia	8,000	L.M.	595	4,760,000	
Sub-Total of D				16,157,000	
E. Service Connections	2,000	Nos.		3,880,000	
F. Miscellaneous					
1. Vehicle	1	No.	606,000	606,000	
2. Office & Workshop Bldg.	1	No.	606,000	606,000	
3. Office Equipment		L.S.		110,000	
4. Tools and Spare Parts		L.S.		110,000	
Sub-Total of F				1,432,000	
Total Direct Cost (A+B+C+D+E+F)				26,498,000	
G. Indirect Cost (25% of Direct Cost)				6,624,500	
Total Estimated Cost				33,122,500	
Unit Cost per Person Served					
For New Construction				3,312	
For Expansion of Existing System (Exclude F.)				3,400	
				3,133	
				3,200	

Note: L.S. - Lump Sum

Cost of spring development includes additional transmission, but it shall be confirmed by survey in the implementation stage.

Source: LWUA standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.11 Unit Cost of Level III (15,000 Service Population)

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Mobilization/Demobilization		L.S.		330,000
B. Spring/Deep Well Source Development and Storage				
1. Spring Development/Deep Well	2	No.	1,770,000	3,540,000
2. Intake Box/Deep Well Pump	2	No.	632,000	1,264,000
3. Chlorinator House & Equipment	2	L.S.		480,000
4. Storage Tank (250 cu m)	2	No.	1,200,000	1,200,000
Sub-Total of B				6,484,000
C. Transmission Main				
1. 160mm dia.	1,000	L.M.	1,234	1,234,000
Sub-Total of C				1,234,000
D. Distribution Main				
1. 160mm dia.	3,000	L.M.	1,234	3,702,000
2. 110mm dia.	7,000	L.M.	1,019	7,133,000
3. 90mm dia.	9,000	L.M.	639	5,751,000
4. 75mm dia.	11,000	L.M.	595	6,545,000
Sub-Total of D				23,131,000
E. Service Connections	3,000	Nos.		5,820,000
F. Miscellaneous				
1. Vehicle	1	No.	606,000	606,000
2. Office & Workshop Bldg.	1	No.	606,000	606,000
3. Office Equipment		L.S.		110,000
4. Tools and Spare Parts		L.S.		110,000
Sub-Total of F				1,432,000
Total Direct Cost (A+B+C+D+E+F)				38,431,000
G. Indirect Cost (25% of Direct Cost)				9,607,750
Total Estimated Cost				48,038,750
Unit Cost per Person Served				
For New Construction				3,203
For Expansion of Existing System (Exclude F.)				3,300
				3,083
				3,100

Note: L.S. - Lump Sum

Cost of spring development includes additional transmission, but it shall be confirmed by survey in the implementation stage.

Source: LWUA standard price in 1994

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.12 Unit Cost of Flush Water Sealed with Septic Tank Toilet

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Demolition		L.S.		1,000
B. Earthwork				
1. Materials				
(1) Gravel Fill	1	cu.m.	424	424
Sub-Total of B-1				424
2. Labor				
(1) Excavation	6	cu.m.	131	786
(2) Backfill	2	cu.m.	119	238
(3) Gravel Fill	1	cu.m.	155	155
Sub-Total of B-2				1,179
Sub-Total of B				1,603
C. Concrete Work				
1. Materials				
Slab on wood planks				
(1) 16 - 2" x 8" x 6' Coco Lumber	128	bd.ft	8	1,024
(2) 10mm dia x 6.0m Rebar	3	pcs.	54	162
(3) #16 Tie Wire	0.5	kg.	54	27
(4) Cement	10	bags	128	1,280
(5) Sand	1.5	cu.m.	335	503
(6) Gravel	2	cu.m.	424	848
(7) Stone Lining with Mortar		L.S.		1,115
Sub-Total of C-1				4,959
2. Labor (30% of C-1)				1,488
Sub-Total of C				6,447
D. Carpentry Work				
1. Materials				
(1) Nipa	60	pcs.	2	120
(2) 1.5m x 1.8m, amakan	3	pcs.	70	210
(3) 2x 3 x 10' Coco Lumber	20	bd.ft	10	200
(4) 2 x 2 x 10' Coco Lumber	33.3	bd.ft	10	333
(5) 3" dia. Bamboo	3	lights	20	60
(6) Assorted CWN	4	kgs.	40	160
(7) Rattan wire	20	pcs.	1	20
Sub-Total of C-1				1,103
2. Labor (30% of C-1)				331
Sub-Total of C				1,434
E. Plumbing				
1. Materials				
(1) Water Closet	1	set	4,500	4,500
(2) Water line and sanitary fixtures		L.S.		1,500
Sub-Total of E-1				6,000
2. Labor (30% of E-1)				1,800
Sub-Total of E				7,800
F. Transportation Cost (excluding indigenous materials)		L.S.		500
G. Indirect Cost				
Profit (10% of A - F)				1,878
VAT (10% of Profit & Labor)				668
Sub-Total of F				2,546
Total of Construction Cost (A+B+C+D+E+F+G)				24,330
				21,300

Source: DOH standard price in 1993

Cost adjusted to 1997 Price Level

Table 10.2.13 Unit Cost of Pour Flush with Double Pit Latrine

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Earthwork				
1. Materials				
(1) Gravel Fill	1	cu.m.	424	424
Sub-Total of A-1				424
2. Labor				
(1) Excavation	6	cu.m.	131	786
(2) Backfill	2	cu.m.	119	238
(3) Gravel Fill	1	cu.m.	155	155
Sub-Total of A-2				1,179
Sub-Total of A				1,603
B. Concrete Work				
1. Materials				
Slab on wood planks				
(1) 16 - 2" x 8" x 6' Coco Lumber	128	bd.ft	8	1,024
(2) 10mm dia x 6.0m Rebar	3	pcs.	54	162
(3) #16 Tie Wire	0.5	kg.	54	27
(4) Cement	10	bags	128	1,280
(5) Sand	1.5	cu.m.	335	503
(6) Gravel	2	cu.m.	424	848
(7) Stone Lining with Mortar		L.S.		1,115
Sub-Total of B-1				4,959
2. Labor (25% of B-1)				1,240
Sub-Total of B				6,199
C. Carpentry Work				
1. Materials				
(1) Nipa	60	pcs	2	120
(2) 1.5m x 1.8m, amekan	3	pcs	70	210
(3) 2 x 3 x 10' Coco Lumber	20	bdft	10	200
(4) 2 x 2 x 10' Coco Lumber	33.3	bdft	10	333
(5) 3" dia. Bamboo	3	lights	20	60
(6) Assorted CWN	4	kgs.	40	160
(7) Rattan wire	20	pcs	1	20
(8) Pale (medium)	1	pc.	190	190
(9) 3" dia. PVC x 3m	1	pc.	180	180
(10) 3" dia. PVC Elbow	2	pcs	15	30
(11) PVC solvent	1	pint	50	50
(12) Ga. 31 x 8' plain Gi sht.	1	sht.	200	200
Sub-Total of C-1				1,753
2. Labor (25% of C-1)				438
Sub-Total of C				2,191
D. Plumbing				
1. Material				
(1) Toilet Bowl-Squat Type	1	pc.	603	603
(2) 75mm dia x 6.0m PVC Pipe	1	pc.	142	142
Sub-Total of D-1				745
2. Labor (25% of D-1)				186
Sub-Total of D				931
E. Transportation Cost (excluding indigenous materials)		L.S.		300
F. Indirect Cost				
Profit (10% of A - D)				1,311
VAT (10% of Profit & Labor)				435
Sub-Total of F				1,746
Total Construction Cost (A+B+C+D+E+F)				12,970
			Say	13,000

Note: L.S. - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.14 Unit Construction Cost of Ventilated Improved Pit Latrine

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Earthwork				
1. Materials				
(1) Gravel Fill	0.5	cu.m.	424	212
Sub-Total of A-1				212
2. Labor				
(1) Excavation	3	cu.m.	131	393
(2) Backfill	1	cu.m.	119	119
(3) Gravel Fill	0.5	cu.m.	155	78
Sub-Total of A-2				590
Sub-Total of A				802
B. Concrete Work				
1. Materials				
Slab on wood planks				
(1) 8 - 2" x 8" x 6' Coco Lumber	64	bd.ft	8	512
(2) 10mm dia x 6.0m Rebar	2	pcs.	54	108
(3) #16 Tie Wire	0.5	kg.	54	27
(4) Cement	4	bags	128	512
(5) Sand	0.5	cu.m	335	168
(6) Gravel	0.5	cu.m	424	212
(7) Stone Lining with Mortar		L.S.		1,075
Sub-total of B-1				2,614
2. Labor (25% of B-1)				653
Sub-Total of B				3,267
C. Carpentry Work				
1. Materials				
(1) Nipa	60	pcs	2	120
(2) 1.5m x 1.8m, amakan	3	pcs	70	210
(3) 2x 3 x 10' Coco Lumber	20	bdft	10	200
(4) 2 x 2 x 10' Coco Lumber	33.3	bdft	10	333
(5) 3" dia. Bamboo	3	lights	20	60
(6) Assorted CWN	4	kgs.	40	160
(7) Rattan wire	20	pcs	1	20
(8) 3 x 3" hinges	2	pc.	30	60
Sub-Total of C-1				1,163
2. Labor (25% of C-1)				291
Sub-Total of C				1,454
D. Plumbing				
1. Material				
(1) 50mm dia. PVC Pipe	1	pc.	71	71
(2) Fly Screen		L.S.		55
Sub-Total of D-1				126
2. Labor (25% of D-1)				38
Sub-Total of D				164
E. Transportation Cost (excluding indigenous materials)		L.S.		150
F. Indirect Cost				
Profit (10% of A - E)				584
VAT (10% of Profit & Labor)				216
Sub-Total of F				800
Total Construction Cost (A+B+C+D+E+F)				6,636
			Say	6,600

Note: L.S. - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.15 Unit Construction Cost of Pit Latrine

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
A. Earthwork				
1. Materials				
(1) Gravel Fill	0.3	cu.m.	424	127
Sub-Total of A-1				127
2. Labor				
(1) Excavation	2	cu.m.	131	262
(2) Backfill	0.6	cu.m.	119	71
(3) Gravel Fill	0.3	cu.m.	155	47
Sub-Total of A-2				380
Sub-Total of A				507
B. Concrete Work				
1. Materials				
Slab on wood planks				
(1) 8 - 2" x 8" x 6' Coco Lumber	38	bd.ft	8	304
(2) 10mm dia x 6.0m Rebar	1	pcs.	54	54
(3) #16 Tie Wire	0.5	kg.	54	27
(4) Cement	3	bags	128	384
(5) Sand	0.3	cu.m	335	101
(6) Gravel	0.3	cu.m	424	127
(7) Stone Lining with Mortar		L.S.		650
Sub-total of B-1				1,647
2. Labor (25% of B-1)				412
Sub-Total of B				2,059
C. Carpentry Work				
1. Materials				
(1) Nipa	30	pcs.	2	60
(2) 1.0m x 1.8m, amakan	3	pcs.	70	210
(3) 2x 3 x 10' Coco Lumber	14	bd.ft	10	140
(4) 2 x 2 x 10' Coco Lumber	24	bd.ft	10	240
(5) 3" dia. Bamboo	3	lights	20	60
(6) Assorted CWN	3	kgs.	40	120
(7) Rattan wire	14	pcs.	1	14
(8) 3 x 3" hinges	2	pcs.	30	60
Sub-Total of C-1				904
2. Labor (25% of C-1)				226
Sub-Total of C				1,130
D. Transportation Cost (excluding indigenous materials)		L.S.		150
E. Indirect Cost				
Profit (10% of A -D)				370
VAT (10% of Profit & Labor)				154
Sub-Total of E				524
Total Construction Cost (A+B+C+D+E)			Say	4,370
				4,400

Note: L.S. - Lump Sum

Source: DOH standard price in 1993

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.16 Unit Cost of School Toilet

Sheet-2

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(8) Nailers - 2"x2"x1012' = 30 pcs.	120.00	bf.	33	3,960
- 2"x2"x10' = 36 pcs.	120.00	bf.	33	3,960
(9) Fascia Board				
1"x12"x12' = 4 pcs.	48.00	bf.	33	1,584
1"x12"x18' = 2 pcs.	36.00	bf.	33	1,188
(10) Wood Plate				
2"x4"x20' = 2 pcs.	26.66	bf.	33	880
(11) 1/4" Thk. Mar. Plywood 4'x8'	14.00	pcs.	30	420
(12) C.W.N. Assorted	15.00	kgs.	30	450
(13) 3" dia x 3m Downspout (PVC)	3.00	pcs.	85	255
(14) 3" dia Elbow (PVC)	2.00	pcs.	15	30
(15) 3" dia Coupling (PVC)	1.00	pcs.	14	14
(16) Ceiling Vent				
1"x1"x8' = 4 pcs.	2.67	bf.	27	72
(17) Screen (1/8"x1/8")	1.00	yd.	85	85
Sub-Total of E-1				28,121
2. Labor (30% of E-1)		L.S.		8,436
Sub-Total of E				36,557
F. Carpentry Work				
1. Materials				
(1) D - 1 Hollow Core Tanguile Flush Type Door w/ Louver (.80x2.20)	2.00	sets	1,514	3,028
(2) D - 2 Hollow Core Tanguile Flush Type Door (.60x2.10)	1.00	sets	1,136	1,136
(3) D - 3 Louver Door (.60x1.40)	5.00	sets	947	4,735
(4) Door Jambs (Apitong)				
2"x6"x14" = 1 pc.	14.00	bf.	33	462
2"x6"x10" = 2 pcs.	20.00	bf.	33	660
2"x6"x10" = 1 pc.	18.00	bf.	33	594
2"x4"x12" = 5 pcs.	40.00	bf.	33	1,320
(7) Wooden Jalousie Window With 5 Blades (.40x.50)	14.00	set	316	4,424
(8) Window Jambs (Apitong)				
2"x6"x16" = 5 pcs.	80.00	bf.	33	2,640
2"x6"x14" = 1 pc.	14.00	bf.	33	462
2"x6"x10" = 1 pc.	10.00	bf.	33	330
(9) Cabinet 3/4"x4'x8' = 1 pc. (plyboard)	1.00	pc.	821	821
Sub-Total of F-1				20,612
2. Labor (30% of F-1)		L.S.		6,184
Sub-Total of F				26,796
G. Tile Work				
1. Materials				
(1) 4 - 1/4"x4 - 1/4" Glazed Tiles	1,950.00	pcs.	4	7,800
(2) 0.10x0.20m Floor Tiles	900.00	pcs.	7	6,300
(3) Cement	4.00	bags	128	512
(4) White Cement	1.00	bag	693	693
Sub-Total of G-1				15,305

Table 10.2.16 Unit Cost of School Toilet

Sheet-3

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
2. Labor (30% of G-1)		L.S.		4,592
Sub-Total of G				19,897
II. Plumbing Work				
I. Materials				
(1) Toilet Bowl - Squat Type	3.00	sets	657	1,971
(2) Toilet Bowl-Sit Type	2.00	sets	657	1,314
(3) Lavatory	2.00	sets	3,000	6,000
(4) 4" dia x 3m PVC San. Pipe	4.00	pes.	164	656
(5) 3" dia x 3m PVC San. Pipe	7.00	pes.	92	644
(6) 1 1/2" dia x 3m PVC San. Pipe	4.00	pes.	58	232
(7) 2" dia. x 3m PVC San. Pipe	2.00	pes.	55	110
(8) 6" x 4" Floor Drain	5.00	pes.	92	460
(9) 2" dia. Elbow PVC	4.00	pes.	7	28
(10) 4" dia WYB PVC	2.00	pes.	27	54
(11) 4" dia. x 3" dia. WYB PVC	12.00	pes.	33	396
(12) 4" dia. x 2" dia. TEE PVC	2.00	pes.	34	68
(13) 4" dia. TEE PVC	3.00	pes.	34	102
(14) 1 1/2" dia. WYB PVC	1.00	pes.	13	13
(15) 4" dia. Clean Out PVC	3.00	pes.	38	114
(16) 3" dia. Clean Out PVC	1.00	pes.	30	30
(17) Faucet	3.00	pes.	55	165
(18) 3" dia. x 2" dia. WYB PVC	2.00	pes.	27	54
(19) 1 1/2" dia. Elbow PVC	6.00	pes.	14	84
(20) PVC Cement	1.00	can	133	133
(21) 2" dia. PVC San. Pipe x 3m	2.00	pes.	87	174
(22) 4" dia. x 2" dia. TEE	2.00	pes.	23	46
(23) Check Valve 1 1/2"	1.00	pes.	200	200
(24) 4" P-Trap	5.00	pes.	72	360
Sub-Total of H-1				13,408
2. Labor (30% of H-1)		L.S.		4,022
Sub-Total of H				17,430
I. Painting				
I. Materials				
(1) Acrylic, Semi Gloss	8.00	gals.	276	2,208
(2) Concrete Sealer	4.00	gals.	218	872
(3) Acri Color: Wood	4.00	gals.	84	336
(4) Enamel, QDE	6.00	gals.	282	1,692
(5) Wood Putty	1.00	gals.	320	320
(6) Paint Thinner	1.00	gals.	63	63
(7) Tinting Color	4.00	pint	42	168
(8) Sand Paper (Assorted)	15.00	pes.	7	105
(9) Miscellaneous		L.S.		1,060
(10) Roof Paint (green, ready-mix)	2.00	gals.	298	596
Sub-Total of I-1				7,420
2. Labor (30% of I-1)		L.S.		2,226
Sub-Total of I				9,646

Table 10.2.16 Unit Cost of School Toilet

Sheet-4

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
J. Electrical Work				
1. Materials				
(1) 40 Watts Fluorescent Lamp	2.00	sets	270	540
(2) Elect. Wire TW #12	24.00	M	7	168
(3) Elect. Conduit - 1/2" dia x 10"	4.00	pcs.	82	328
(4) Entrance Cap. 1/2" dia	1.00	pc.	30	30
(5) Switch Outlet, Flush Type	2.00	pcs.	41	82
(6) Utility Box 2"x3"	2.00	pcs.	7	14
(7) Porcelain Receptacle 2" dia	2.00	pcs.	7	14
(8) Safety Switch 60A, 250V	1.00	set	519	519
(9) Electrical Tape	1.00	roll	23	23
Sub-Total of J-1				1,718
2. Labor (30% of J-1)		L.S.		515
Sub-Total of J				2,233
K. Hardware				
1. Materials				
(1) 3"x3" Butt Hinges (Loose Pin)	10.00	pcs.	15	150
(2) 4"x4" Butt Hinges (Loose Pin)	12.00	pcs.	19	228
(3) Door Lockset (Schlage US)	3.00	pcs.	481	1,443
(4) Barrel Bolt (4")	5.00	pcs.	42	210
(5) Cabinet Pull (4")	5.00	pcs.	7	35
(6) Water Storage Cover				
Checkered Plate 1/4" thick				
1.44x0.645 w/ L bar & flat bar	1.00	set	1,043	1,043
0.645x0.633 w/ L bar & flat bar	2.00	set	588	1,176
(7) Padlock	1.00	pcs.	401	401
Sub-Total of K-1				4,686
2. Labor (30% of K-1)		L.S.		1,406
Sub-Total of K				6,092
L. Septic Tank and Sewage Basin				
1. Materials				
(1) 4" CHB	180.00	pcs.	5	900
(2) Cement	18.00	bags	128	2,304
(3) Sand	1.50	cu.m	335	503
(4) Gravel	1.00	cu.m	424	424
(5) Rebars: 10mm dia x 6m	29.00	pcs.	74	2,146
(6) #16 Tire Wire	2.00	kgs.	54	108
(7) Formworks: Coco Lumber				
2"x3"x10' = 12 pcs.	60.00	bf.	8	480
1/4" plywood ord. 4'x8'	2.00	pcs.	446	892
C.W.N. (Assorted)	2.00	kgs.	31	62
Sub-Total of L-1				7,819
2. Labor (30% of L-1)		L.S.		2,346
Sub-Total of L				10,165

Table 10.2.16 Unit Cost of School Toilet

Sheet-5

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
M. Shallow Well (18 depth)				
a. Drilling of Well & Installation of Steel Casing/Screen				
1. Materials				
(1) 63mm x 6m PVC Pipe with socket	2.00	pcs.	896	1,792
(2) 63mm x 3m PVC Pipe with plug	1.00	pc.	452	452
(3) 63mm PVC Socket	1.00	pc.	99	99
(4) 63mm x 3m PVC Screen	1.00	pc.	1,433	1,433
Sub-Total of M-a-1				3,776
2. Labor, Fuel, Lubricant and others Well Drilling for 18m depth at 150mm borehole	18.00	m	573	10,314
Sub-Total of M-a				14,090
b. Well Development		L.S.		550
c. Gravel Packing, Installation of Hand-Pump and Construction of Platform				
1. Materials				
(1) 50mm Jetmatic Handpump	1.00	set	2,623	2,623
(2) 50mm x 1m GI Pipe (Sch. 40)	1.00	pc.	82	82
(3) #10 Sieved Gravel	0.10	cu.m	959	96
(4) Coarse Sand	0.07	cu.m	474	33
(5) Cement for Sanitary Seal	1.00	bag	128	128
(6) Pump Base and Platform				
1) Cement	4.00	bags	128	512
2) Gravel	1.00	cu.m	424	424
3) Sand	1.00	cu.m	335	335
4) Plywood (1,200mm x 2,400mm x 6mm)	1.00	pc.	446	446
5) Form Lumber (50mmx75mmx1,800mm)	1.00	pc.	49	49
6) Nail	1.00	kg.	31	31
Sub-Total of M-c-1				4,759
2. Labor (40% of M-c-1)		L.S.		1,904
Sub-Total of M-c				6,663
Sub-Total of M				21,303
N. Freight Cost (11% of Materials for A - M excluding sand and gravel)		L.S.		16,081
O. Indirect Cost				
Profit (10% of A - N)				23,911
VAT (10% of Profit & Labor)				7,322
Sub-Total of O				31,233
Total of Construction Cost (A to O)				270,340
P. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		2,200
2. Construction Supervision		L.S.		1,600
Sub-Total of P				3,800
GRAND TOTAL.				274,140
			Say	274,100

Source: DOH standard price in 1993.

Unit Cost: Adjusted to 1997 Price Level

Table 10.2.17 Unit Cost of Public Toilet

Sheet-2

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(6) Purlins - 2"x2"x12" = 18 pcs.	72.00	bf.	33	2,376
(7) WD Cleats - 2"x2"x10" = 6 pcs.	20.00	bf.	33	660
(8) Nailers - 2"x2"x10 1/2" = 30 pcs.	120.00	bf.	33	3,960
- 2"x2"x10" = 36 pcs.	120.00	bf.	33	3,960
(9) Fascia Board				
1"x12"x12" = 4 pcs.	48.00	bf.	33	1,584
1"x12"x18" = 2 pcs.	36.00	bf.	33	1,188
(10) Wood Plate				
2"x4"x20" = 2 pcs.	26.66	bf.	33	880
(11) 1/4" Thk. Mar. Plywood 4'x8'	14.00	pcs.	479	6,706
(12) C.W.N. Assorted	15.00	kgs.	30	450
(13) 3" dia x 3m Downspout (PVC)	3.00	pcs.	85	255
(14) 3" dia Elbow (PVC)	2.00	pcs.	15	30
(15) 3" dia Coupling (PVC)	1.00	pcs.	14	14
(16) Ceiling Vent, 1"x1"x8", 4 pcs.	2.67	bf.	27	72
(17) Screen (1/8"x1/8")	1.00	yd.	85	85
Sub-Total of E-1				34,407
2. Labor (30% of E-1)				10,322
Sub-Total of E				44,729
F. Carpentry Work				
1. Materials				
(1) D - 1 Hollow Core Tanguile Flush Type Door w/ Louver (.80x2.20)	2.00	sets	1,514	3,028
(2) D - 2 Hollow Core Tanguile Flush Type Door (.60x2.10)	1.00	sets	1,136	1,136
(3) D - 3 Louver Door (.60x1.40)	5.00	sets	947	4,735
(4) Door Jambs (Apitong)				
2"x6"x14" = 1 pc.	14.00	bf.	33	462
2"x6"x10" = 2 pcs.	20.00	bf.	33	660
2"x6"x10" = 1 pc.	18.00	bf.	33	594
2"x4"x12" = 5 pcs.	40.00	bf.	33	1,320
(7) Wooden Jalousie Window With 5 Blades (.40x.50)	14.00	set		4,172
(8) Window Jambs (Apitong)				
2"x6"x16" = 5 pcs.	80.00	bf.	33	2,640
2"x6"x14" = 1 pc.	14.00	bf.	33	462
2"x6"x10" = 1 pc.	10.00	bf.	33	330
(9) Cabinet				
3/4"x4"x8" = 1 pc. (plyboard)	1.00	pc.	821	821
Sub-Total of F-1				20,360
2. Labor (30% of F-1)				6,108
Sub-Total of F				26,468
G. Tile Work				
1. Materials				
(1) 4 - 1/4"x4 - 1/4" Glazed Tiles	1,950	pcs.	4	7,800
(2) 0.10x0.20m Floor Tiles	900.00	pcs.	7	6,300
(3) Cement	4.00	bags	128	512

Table 10.2.17 Unit Cost of Public Toilet

Sheet-3

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(4) White Cement	1.00	bag	693	693
(5) Tiles Fittings		L.S.		5,280
Sub-Total of G-1				20,585
2. Labor (30% of G-1)				6,176
Sub-Total of G				26,761
II. Plumbing Work				
1. Materials				
(1) Urinal	3.00	sets	1,171	3,513
(2) Toilet Bowl - Squat Type	6.00	sets	657	3,942
(3) 4" dia x 3m PVC San. Pipe	6.00	pes.	164	984
(4) 3" dia x 3m PVC San. Pipe	4.00	pes.	92	368
(5) 2" dia x 3m PVC San. Pipe	3.00	pes.	55	165
(6) 3/4" dia x 6m G.I. Pipe Sch. 40	5.00	pes.	269	1,345
(7) 1/2" dia x 6m G.I. Pipe Sch. 40	1.00	pes.	197	197
(8) 4"x4" WYE PVC	1.00	pes.	27	27
(9) 3" dia Elbow PVC	10.00	pes.	33	330
(10) 3" dia 45 degrees Bend PVC	2.00	pes.	27	54
(11) 2" dia Elbow PVC	6.00	pes.	7	42
(12) 2" dia 45 degrees Bend PVC	2.00	pes.	22	44
(13) 1/2" dia Elbow G.I.	5.00	pes.	11	55
(14) 4" dia 3" dia WYE PVC	8.00	pes.	44	352
(15) 3/4" dia TEE G.I.	7.00	pes.	44	308
(16) 1/2" dia TEE G.I.	5.00	pes.	22	110
(17) 4" dia x 2" dia TEE PVC	6.00	pes.	44	264
(18) 4" dia Clean Out PVC	3.00	pes.	38	114
(19) 2" dia Clean Out PVC	1.00	pes.	27	27
(20) Faucet	10.00	pes.	55	550
(21) 3" dia x 2" dia Elbow Reducer PVC	1.00	pes.	30	30
(22) 3" dia x 2" dia WYE PVC	3.00	pes.	27	81
(23) 2" dia x 2" dia WYE PVC	3.00	pes.	16	48
(24) PVC Cement	1.00	can	133	133
(25) 4" dia x 2" dia WYE PVC	2.00	pes.	44	88
(26) Gate Valve 3/4" dia	1.00	pes.	133	133
(27) Gate Valve 1/2" dia	1.00	pes.	105	105
(28) Water Meter 3/4" dia	1.00	pes.	1,390	1,390
(29) 3/4" dia x 1/2" dia Elbow Reducer G.I.	1.00	pes.	15	15
Sub-Total of II-1				14,814
2. Labor (30% of II-1)				4,444
Sub-Total of II				19,258
I. Painting				
1. Materials				
(1) Acrylic, Semi Gloss	8.00	gals.	276	2,208
(2) Concrete Sealer	4.00	gals.	218	872
(3) Acri Color: Wood	4.00	gals.	84	336
(4) Enamel, QDE	6.00	gals.	282	1,692
(5) Wood Putty	1.00	gals.	320	320
(6) Paint Thinner	1.00	gals.	63	63

Table 10.2.17 Unit Cost of Public Toilet

Sheet-4

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(7) Tinting Color	4.00	pint	42	168
(8) Sand Paper (Assorted)	15.00	pcs.	7	105
(9) Miscellaneous		L.S.		1,066
(10) Roof Paint (green, ready-mix)	2.00	gals.	298	596
Sub-Total of I-1				7,426
2. Labor (30% of I-1)				2,228
Sub-Total of I				9,654
J. Electrical Work				
1. Materials				
(1) 40 Watts Fluorescent Lamp	2.00	sets	270	540
(2) Elect. Wire TW #12	24.00	M	7	168
(3) Elect. Conduit - 1/2" dia x 10"	4.00	pcs.	82	328
(4) Entrance Cap. 1/2" dia	1.00	pc.	30	30
(5) Switch Outlet, Flush Type	2.00	pcs.	41	82
(6) Utility Box 2"x3"	2.00	pcs.	7	14
(7) Porcelain Receptacle 2" dia	2.00	pcs.	7	14
(8) Safety Switch 60A, 250V	1.00	set	519	519
(9) Electrical Tape	1.00	roll	23	23
Sub-Total of J-1				1,718
2. Labor (30% of J-1)				515
Sub-Total of J				2,233
K. Hardware				
1. Materials				
(1) 3"x3" Butt Hinges (Loose Pin)	10.00	pcs.	15	150
(2) 4"x4" Butt Hinges (Loose Pin)	12.00	pcs.	19	228
(3) Door Lockset (Schlage US)	3.00	pcs.	481	1,443
(4) Barrel Bolt (4")	5.00	pcs.	42	210
(5) Cabinet Pull (4")	5.00	pcs.	7	35
(6) Water Storage Cover Checkered Plate 1/4" thick 1.44x0.633 w/ L bar & flat bar	1.00	set	1,043	1,043
(7) 0.645x0.633 w/ L bar & flat bar	2.00	set	588	1,176
(8) Padlock	1.00	pcs.	401	401
Sub-Total of K-1				4,686
2. Labor (30% of K-1)				1,406
Sub-Total of K				6,092
L. Septic Tank and Sewage Basin				
1. Materials				
(1) 4" CHB	180.00	pcs.	5	900
(2) Cement	18.00	bags	128	2,304
(3) Sand	1.50	cu m	335	503
(4) Gravel	1.00	cu m	424	424
(5) Rebars: 10mm dia x 6m	29.00	pcs.	74	2,146
(6) #16 Tire Wire	2.00	kgs.	54	108

Table 10.2.17 Unit Cost of Public Toilet

Sheet-5

(Cost: Peso)

Description	Quantity	Unit	Unit Cost	Cost
(7) Formworks: Coco Lumber 2"x3"x10' = 12 pcs.	60.00	bf.	8	480
1/4" plywood ord. 4'x8'	2.00	pcs.	446	892
C.W.N. (Assorted)	2.00	kgs.	31	62
Sub-Total of L-1				7,819
2. Labor (30% of L-1)				2,346
Sub-Total of L				10,165
M. Concrete Water Tank (Elevated)				
1. Earth Work				
(1) Materials				
1) Gravel Fill	1.00	cu.m	424	424
Sub-Total of M-1 (1)				424
(2) Labor				
1) Excavation	14.70	cu.m	131	1,926
2) Backfill	13.08	cu.m	119	1,557
3) Gravel Fill	1.00	cu.m	155	155
Sub-Total of M-1 (2)				3,637
Sub-Total of M-1				4,061
2. Materials				
(1) Cement	62.00	bags	128	7,936
(2) Sand	4.50	cu.m	335	1,508
(3) Gravel	8.00	cu.m	424	3,392
(4) Rebars: 12mm dia x 6m	160.00	pcs.	54	8,640
(5) #16 Tie Wire	4.00	kgs.	54	216
(6) Formworks:				
1/4" plywood	12.00	pcs.	446	5,352
2"x3"x16' = 60 pcs.	480.00	bf.	8	3,840
(7) C.W.N. (Assorted)	5.00	kgs.	31	155
Sub-Total of M-2				43,222
3. Labor (30% of M-2)				12,967
Sub-Total of M				60,250
N. Freight Cost (11% of Materials for A - M excluding sand and gravel)				20,841
O. Indirect Cost				
Profit (10% of A - M)				30,049
VAT (10% of Profit & Labor)				9,783
Sub-Total of O				39,832
Total of Construction Cost (A to O)				340,321
P. Estimated Government Expenses				
1. Preliminary & Detailed Engineering Cost		L.S.		2,200
2. Construction Supervision		L.S.		1,600
Sub-Total of P				3,800
GRAND TOTAL				344,121
			Say	344,100

Source: DOH standard price in 1993.

Unit Cost: Adjusted to 1997 Price Level

10.2.2 Unit Cost of Equipment

Unit cost (CIF Manila) of equipment was referred to the market price in 1997 as follows.

(1) Medium size rotary drilling rig

Type: Truck-mounted top head drive mud circulation type

Rated drilling capacity: 150 m depth for ϕ 250 mm bore hole

Equipment composition:

One unit of truck-mounted drilling rig

Each one set of operating accessories, drilling tools, casing tools and fishing tools

One set of spare parts (equivalent to 10% of above equipment/tool cost)

Unit cost: Peso 32,314,000 per set

(2) Medium size percussion drilling equipment

Type: Truck-mounted cable percussion type

Rated drilling capacity: 150 m depth for ϕ 250 mm bore hole

Equipment composition:

One unit of truck-mounted drilling rig

Each one set of operating accessories, drilling tools, pipe handling tools and fishing tools

One set of spare parts (equivalent to 10% of above equipment/tool cost)

Unit cost: Peso 25,582,000 per set

(3) Well rehabilitation equipment

Equipment composition:

One unit of diesel engine driven air compressor (7.5 kg/sq.cm, 500 liter/min.)

One set of air hose and hose fittings

Unit cost: Peso 280,000 per set

(4) Service truck

Type: Diesel engine driven 4 tons truck equipped with crane

Unit cost: Peso 1,200,000 per unit

(5) Support vehicle

Type: Diesel engine driven pick-up truck with electric winch

Unit cost: Peso 590,000 per unit

(6) Refuse collection truck

Type: Closed type compactor truck with 5 cu.m of payload capacity

Unit cost: Peso 2,057,000 per unit including spare parts

(7) Maintenance tools

One set of maintenance tools for O&M of Level I facility shall be provided to respective municipality.

Unit cost: Peso 10,000 per unit

(8) Water quality testing kits

One set of water quality testing kits for O&M of Level I facility shall be provided to respective municipality.

Type: Ammonia-nitrogen/Iron testing kit

Unit cost: Peso 15,300 per unit

10.2.3 Cost of Laboratory and Equipment

Required cost for new laboratory including building/facility and instruments/chemicals and additional cost for upgrading of existing laboratory are shown in Table 10.2.18 and Table 10.2.19, respectively.

Table 10.2.18 Cost for New Laboratory

Item	Unit	Unit Cost (Pesos)	Qty.	Amount (Pesos)
1. Building				
New Building	m ²	15,000	57	855,000
2. Instruments				
Turbidity meter	set	35,000	1	35,000
Color meter	set	9,800	1	9,800
pH/Residual chlorine cheker	set	15,000	1	15,000
Incubator	set	100,000	1	100,000
Refrigerator	set	25,000	2	50,000
Sterilizer	set	50,000	1	50,000
Water quality testing kits	set	300,000	1	300,000
Electric stove	set	1,000	1	1,000
Range hood	set	10,000	1	10,000
Sub-total				570,800
3. Accessories				
Sink	L.S.			
Working table	L.S.			
Shelf	L.S.			
Office desk	L.S.			
Chair	L.S.			
Sub-total				60,000
4. Glassware/Chemicals				
Glassware/Chemicals	L.S.			100,000
Total				1,585,800

Table 10.2.19 Cost for Upgrading Laboratory

Item	Unit	Unit Cost (Pesos)	Qty.	Amount (Pesos)
1. Instruments				
Turbidity meter	set	35,000	1	35,000
Color meter	set	9,800	1	9,800
pH/Residual chlorine cheker	set	15,000	1	15,000
Incubator	set	100,000	0	0
Refrigerator	set	25,000	1	25,000
Sterilizer	set	50,000	0	0
Water quality testing kits	set	300,000	1	300,000
Electric stove	set	1,000	1	1,000
Range hood	set	10,000	1	10,000
Sub-total				395,800
2. Glassware/Chemicals				
Glassware/Chemicals	L.S.			50,000
Total				445,800

10.3 Cost of required Facilities and Equipment

10.3.1 Cost of Required Facilities

Table 10.3.1 Construction Cost of Water Supply Facilities Required for Phase I (2003)

Unit: P 1,000 Pesos

Municipality	Urban Water Supply Level III	Rural Water Supply								Level I Rehabilitation	Total	Grand Total
		New System							Subtotal			
		Level II	Level I			Shallow Well	Spring Dev.					
			Deep Well									
40 m	80 m	120 m										
Buenavista	33,043	2,660		4,927			3,082	3,823	11,832	68	14,560	47,608
Cabadbaran	6,701	650									650	7,351
Carmen	1,116				396		193	294	883	4	887	2,003
Jabonga	567		170				161	294	625	4	629	1,196
Kitcharao		2,002									2,002	2,002
Las Nieves	90			3,234			3,210	3,529	10,023	45	10,068	10,158
Magallanes	14,166			1,309			32	294	1,695	19	1,714	15,880
Nasipit	7,454	656									656	8,110
Remedios T. Romualdez	5,945	1,918									1,918	7,863
Santiago	1,350		170				96		266	4	270	1,620
Tubay	8,748	4,136		1,916			482	882	3,280	26	7,442	16,190
PW4SP Study Area	79,185	12,022	340	11,496	396	7,256	9,116	28,604	170	40,796	119,981	

Table 10.3.2 Construction Cost of Water Supply Facilities Required for Phase II (2010)

Unit: P 1,000 Pesos

Municipality	Urban Water Supply Level III	Rural Water Supply								Level I Rehabilitation	Total	Grand Total
		New System							Subtotal			
		Level II	Level I			Shallow Well	Spring Dev.					
			Deep Well									
40 m	80 m	120 m										
Buenavista	26,586			8,211			5,393	3,823	17,427	113	17,540	44,126
Cabadbaran	59,629			15,327			4,109		19,436	211	19,647	79,276
Carmen	17,491					2,375	1,477	294	4,146	23	4,169	21,660
Jabonga	13,887	2,553					2,568	294	5,415	56	5,471	19,358
Kitcharao	25,656	1,532					1,156		2,688	34	2,722	28,378
Las Nieves	6,113			4,653			4,783	3,529	12,965	64	13,029	19,142
Magallanes	37,560			5,748			161	294	6,203	79	6,282	43,851
Nasipit	23,366			7,937			2,087		10,024	109	10,133	33,499
Remedios T. Romualdez	14,760			5,474			1,412		6,886	75	6,961	21,721
Santiago	34,413	1,191					1,894		3,085	26	3,111	37,524
Tubay	7,606			6,560			1,701	882	9,152	90	9,242	16,848
PW4SP Study Area	267,076	5,276	53,919	2,375	26,741	9,116	97,427	880	98,307	365,383		

Table 10.3.3 Cost of Sanitation Facilities Required for Phase I (2003)

Unit P 1,000 Pesos

Municipality	Urban Sanitation									Rural Sanitation							
	Household Toilets					Public School Toilets	Public Toilets	Total Construction Cost	Total Public Investment Cost	Household Toilets					Public School Toilets	Total Construction Cost	Total Public Investment Cost
	Flush	Pour Flush	VIP/ Dry	Sub-total of Construction Cost	Sub-total of Public Investment Cost					Flush	Pour Flush	VIP/ Dry	Sub-total of Construction Cost	Sub-total of Public Investment Cost			
Buenavista	12,248	663	950	13,861	8	2,691	1,376	17,928	4,075	14,729	3,848	18,577	169	6,070	24,647	6,239	
Cabadbaran	809	1,59	1,043	3,451	18	3,729	1,376	8,556	5,123	1,001	4,422	5,423	12	8,138	13,561	8,150	
Carmen	3,302	7,54		10,842	87	969	1,032	12,843	2,088	22,997		22,997	264	2,659	25,656	2,923	
Jabonga	2,279		178	2,457		583	688	3,728	1,271		2,072	2,072		3,432	5,504	3,432	
Kitcharao		2,34	389	2,729	27	1,291	1,032	5,052	2,350	3,198	964	4,162	37	1,683	5,845	1,720	
Las Nieves	426	598	66	1,090	7	223	688	2,001	918	17,056	2,765	19,821	196	4,692	24,513	4,898	
Magallanes	9,947	17,3	772	28,113	200	2,140	1,032	31,285	3,372	3,380	524	3,901	39	777	4,678	816	
Nasipit	13,249	5,14	1,023	19,420	59	2,752	1,032	23,204	3,843		2,336	2,336		3,298	5,634	3,298	
Remedios T. Ro-	3,003		231	3,234		480	1,032	4,746	1,512	5,603	1,201	6,804	64	1,222	8,026	1,286	
Santiago	6,007	780	461	7,249	9	1,821	1,032	10,102	2,863		891	891		1,959	2,850	1,959	
Tubay	2,364	5,43		7,798	62	652	1,032	9,482	1,746	26,377		26,377	303	2,840	29,217	3,143	
PW4SP Study Area	53,634	41,4	5,114	100,24	477	17,331	11,352	128,92	29,160	94,341	19,020	113,36	1,084	36,790	150,13	37,854	

Table 10.3.4 Cost of Sanitation Facilities Required for Phase II (2010)

Unit: 1,000 Pesos

Municipality	Urban Sanitation									Rural Sanitation								
	Household Toilets					Public School Toilets	Public Toilets	Total Construction Cost	Total Public Investment Cost	Urban Sewer-age	Household Toilets					Public School Toilets	Total Construction Cost	Total Public Investment Cost
	Flush	Pour Flush	VIP/ Dry	Sub-total of Construction Cost	Sub-total of Public Investment Cost						Flush	Pour Flush	VIP/ Dry	Sub-total of Construction Cost	Sub-total of Public Investment Cost			
Buenavista	35,763			35,763		4,267	1,721	41,751	5,988	69,270		56,394		56,394	649	9,626	66,020	10,275
Cabadbaran	41,705	780		42,485	9	5,822	2,065	50,372	7,896	79,628		59,852		59,852	688	12,704	72,556	13,392
Carmen	8,733			8,733		1,318	1,032	11,083	2,350			13,832		13,832	159	3,616	17,448	3,775
Jabonga	7,093	169		7,262	2	777	1,032	9,071	1,811			26,507		26,507	305	4,572	31,079	4,877
Kitcharao	20,107			20,107		1,940	1,376	23,423	3,316			12,948		12,948	149	2,528	15,476	2,677
Las Nieves	3,600	78		3,678	1	323	688	4,689	1,012			48,893		48,893	562	6,810	55,703	7,372
Magallanes	30,715	533		31,248	6	3,534	1,032	35,814	4,572	58,656		7,722		7,722	89	1,283	9,005	1,372
Nasipit	37,147			37,147		5,189	1,721	44,057	6,910	72,708		27,755		27,755	319	6,217	33,972	6,536
Remedios T. Ro-	10,096	689		10,785	8	739	1,032	12,556	1,779			17,056		17,056	196	1,892	18,938	2,078
Santiago	24,346	3,874		28,220	45	2,679	1,032	31,931	3,756	43,807		22,347		22,347	257	2,881	25,228	3,138
Tubay	7,753	377		8,130	4	817	1,032	9,979	1,853			23,179		23,179	267	3,557	26,736	3,824
PW4SP Study Area	227,05	6,500		233,55	75	27,405	13,763	274,72	41,243	324,06		316,48		316,48	3,640	55,676	372,16	59,316

10.4 Costs of Sector Management

10.4.1 Breakdown of Community Development and Training Cost

Cost of community development and training was estimated at 12% of the total construction cost of Level I & II water supply facilities and public toilets and at 3% of the total construction cost of Level III water supply systems. This was formulated based on the following:

- (1) The 12% was derived on the basis of DILG's past experience in BWSA formation; and
- (2) The 3% was derived on the basis of LWUA's past experience in the institutional strengthening needs of W.Ds.

These ratios adopted for estimating community development and training cost will allow the province to meet with its needs for community development in the sector management. The following breakdown provides a view of the components under this category.

Table 10.4.1 Breakdown of Community Development and Training Cost

Component	% Share of Cost
1. Preparation for Training Activities	10
1.1 Transportation	1
1.2 Technical Assistance	1
1.3 Food	1
1.4 Supplies and Materials including Production of Training Kits	6
1.5 Generation of Training Aids	1
2. Conduct of Training Activities	53
2.1 Transportation	5
2.2 Food	12
2.3 Accommodation	33
2.4 Training Room Rental	1
2.5 Miscellaneous	2
3. Field Visits to Support BWSA Formation	37
3.1 Transportation	5
3.2 Food	15
3.3 Accommodation	12
3.4 Field	4
Total	100

11. FINANCIAL ARRANGEMENTS

11.3 Additional Funding Requirements

Percentages for Annual Investment

Percentages of annual investment for different fields of implementation activities are assumed for each sub-sector as general indication and summarized in Table 11.3.1. Assumptions on investment timing shall be subject to change, especially for individual projects depending on fund availability and relevant conditions such as land acquisition and institutional set-up.

Table 11.3.1 Percentages for Annual Investment

Sub-Sector	Component	1996	1997	1998	1999	2000	Total
Urban Water Supply	Level III System						
	Feasibility Study and Detail Design	50	50	0	0	0	100
	Construction & Supervision	0	20	30	30	20	100
	Institutional Development	30	20	20	20	10	100
Rural Water Supply	Level I Facility						
	Detail Design	50	50	0	0	0	100
	Construction & Supervision	0	20	30	30	20	100
	Institutional Development	30	30	20	10	10	100
	Level II System						
	Detail Design	100	0	0	0	0	100
	Construction & Supervision	50	50	0	0	0	100
	Institutional Development	50	50	0	0	0	100
Sanitation	Urban Household Toilet	12	22	22	22	22	100
	Rural Household Toilet	12	22	22	22	22	100
	Public School Toilet	12	22	22	22	22	100
	Public Toilet	12	22	22	22	22	100
	Disinfection of Level I Wells	12	22	22	22	22	100
	Detail Design	100	0	0	0	0	100
	Construction & Supervision	0	20	30	30	20	100
Institutional Development	30	30	20	10	10	100	

Note: Institutional development includes:

1. Capacity enhancement program
2. Community management program,
3. Health and hygiene education
4. Water quality surveillance, and
5. Administrative support.

Urban water supply:

- Engineering services for feasibility study and detailed design will be undertaken in the first two years.

- Construction work accompanied by supervisory services will be commenced partially in 2nd year and in full operation from 3rd year to 4th year.
- Community development will take place from the first year.

Rural water supply (Level I):

- Engineering services for detailed design will be undertaken during the first two years for Level I and completed within the first year for Level II.
- Construction work accompanied by supervisory services will be partially commenced from the first year and in full operation from 2nd year for Level I, while Level II will be completed within first two years.
- Community development and training will take place from the first year for Level I, while Level II will be completed within the first two years.

Sanitation:

- Engineering services for detailed design will be completed within the first year.
- Construction work accompanied by supervisory services will be partially commenced in the first year and in full operation from 2nd year.
- Community development and training will be in full operation from the first year.

11.4 Medium-Term Implementation Arrangements

11.4.2 Alternative Countermeasures

Comprehensive Investment Need Ranking for the Municipalities

Table 11.4.1 presents the comprehensive investment need ranking for the municipalities.

11.5 National Government Assisted Level I Water Supply and Sanitation Project

Presented in Table 11.5.1 are the available IRA for GOP-Assisted Level I Water Supply and Rural Sanitation Project for Eligible Municipalities. Allotment of IRA for rural water supply and rural sanitation comprise of provincial available IRA and municipal available IRA.

Table 11.5.2 presents the urban sanitation project for eligible municipalities while Table 11.5.3 presents the summary of the total available IRA for GOP-assisted Level I Water Supply and Sanitation project.

The FIRR for Level I water supply project is calculated using a discount rate of .09 percent, as presented in Table 11.5.4.

Table 11.6.1 presents the investment program of GOP-assisted Level I Watersupply and Sanitation Project.

O and M for Rural Water Supply

Table 11.6.2 shows the O and M cost for Level I facilities which include the reconstruction cost, rehabilitation cost and recurrent cost per household per year for O and M. Table 11.6.3 presents the O and M cost per HH per month by facility and proportion to monthly family income while Table 11.6.4 shows the family income.

O and M for Sanitation

Table 11.6.5 presents the O and M cost for rural sanitation while Table 11.6.6 presents the O and M cost for urban sanitation.

Table 11.4.1 Comprehensive Investment Need Ranking of the Municipalities

Name of Municipality	Evaluation Factor						Score by Sub-Sector						Weighted Score by Sub-Sector				Synthetic Investment Need Ranking				
	(% of Underserved and Unserved Population or Households)						Rural Water Supply			Urban Water Supply			Rural Sanitation		Urban Sanitation			Rural Sanitation		Urban Sanitation	
	Urban Water Supply	Rural Water Supply	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Urban Water Supply	Rural Sanitation		Urban Water Supply	Rural Sanitation	Urban Water Supply	Rural Sanitation
Buнаваста	N.A.	70	25	31	1.00	0.60	0.40	0.30	0.30	0.30	0.12	0.08	0.31	0.80	2						
Cabadbaran	N.A.	21	8	14	0.56	0.20	0.20	0.17	0.06	0.04	0.04	0.31	0.35	9							
Caamen	N.A.	38	8	18	0.49	0.40	0.20	0.15	0.12	0.04	0.04	0.44	0.44	7							
Jabonga	N.A.	32	3	0	0.79	0.40	0.20	0.24	0.12	0.04	0.08	0.50	0.50	6							
Kircharao	N.A.	42	21	32	0.39	0.60	0.40	0.12	0.18	0.12	0.08	0.66	0.66	4							
Late Nieves	N.A.	75	32	40	0.39	1.00	0.80	0.12	0.30	0.16	0.08	0.72	0.72	3							
Magallanes	N.A.	44	83	47	0.73	0.60	1.00	0.60	0.20	0.16	0.04	0.40	0.40	8							
Nasipit	N.A.	26	38	2	0.47	0.20	0.80	0.40	0.40	0.08	0.08	0.55	0.55	5							
Remedios T. Romualdez	N.A.	34	18	34	0.90	0.40	0.40	0.27	0.12	0.08	0.12	0.34	0.34	10							
Santiago	N.A.	26	22	5	0.39	0.20	0.60	0.20	0.12	0.06	0.12	0.04	0.04	1							
Tubay	N.A.	70	34	23	1.00	0.80	0.20	0.30	0.30	0.16	0.04	0.80	0.80	1							
PIVASP Study Area	N.A.	45	30	21																	

Note:

(1) Scoring to Underserved and Unserved Percentage.

2) Assumed Weight by Sub-Sector for Synthetic Evaluation by Municipality.

Score	Range of Underserved and Unserved Percentage				Allocated Weight		
	61 < %	41 < %	21 < %	1 < %	0.3	0.2	0.2
1.0	61 < %	41 < %	21 < %	1 < %	0.3	0.2	0.2
0.8	51 < %	31 < %	11 < %	1 < %	0.3	0.2	0.2
0.6	41 < %	21 < %	1 < %	1 < %	0.3	0.2	0.2
0.4	31 < %	11 < %	1 < %	1 < %	0.3	0.2	0.2
0.2	21 < %	1 < %	1 < %	1 < %	0.3	0.2	0.2

Table 11.5.4 FIRR for Level I Rural Water Supply

Unit: Pesos

Year	Nos. of Deep Well	Nos. of Shallow Well	Spring Dev't	Construction Cost	Rehab. And Replacement Cost	O&M Cost	Cash Outflow	No. of Households ^{1/}	Water Rate per Month per Household	Loans and Subsidies	Cash Inflow	Net Value
1	2	4	1	1,000,500		0	1,000,507	502	52	0	0	(1,000,507)
2	2	7	1	1,096,800		0	1,096,810	502	52	0	313,248	(783,562)
3	2	6	1	1,064,700		10,005	1,074,714	502	52		313,248	(761,466)
4	2	4	1	1,000,500		20,973	1,021,480	502	52		313,248	(708,232)
5						31,620	31,620	502	52		313,248	281,628
6						41,625	41,625	502	52		313,248	271,623
7						41,625	41,625	502	52		313,248	271,623
8						41,625	41,625	502	52		313,248	271,623
9						41,625	41,625	502	52		313,248	271,623
10						41,625	41,625	502	52		313,248	271,623
11						41,625	41,625	502	52		313,248	271,623
12					203,600		245,225	502	52		313,248	68,023
13					299,900		341,525	502	52		313,248	(28,277)
14					267,800		309,425	502	52		313,248	3,823
15					203,600		245,225	502	52		313,248	68,023
16							41,625	502	52		313,248	271,623
17							41,625	502	52		313,248	271,623
18							41,625	502	52		313,248	271,623
19							41,625	502	52		313,248	271,623
20							41,625	502	52		313,248	271,623

TOTAL 440,554
 FIRR 1.2%
 NPV 108,108

Discount Rate for NPV = 0.09 per year

Table 11.6.1 Investment Program of GOP-Assisted Level I Water Supply and Sanitation Project (Unit: Pesos)

Category	Total Amount	1st year	2nd year	3rd year	4th year	5th year
A. Const. & Civil Works						
1. Water Supply	4,162,300	0	832,460	1,248,690	1,248,690	832,460
2. Sanitation	26,165,850	0	5,233,170	7,849,755	7,849,755	5,233,170
3. Land Acquisition	185,000	0	37,000	55,500	55,500	37,000
B. Equip./Logistic Support	920,600	0	920,600	0	0	0
C. Consultancy Services						
1. Hydrogeological Survey	1,148,000	1,148,000	0	0	0	0
2. D/D and Const. Sv.	3,356,447	1,342,579	671,289	671,289	335,645	335,645
D. Institutional Devt.						
1. Capacity Enhanc. Prog.	3,200,000	960,000	960,000	640,000	320,000	320,000
2. Commu. Manag. Prog.	1,421,640	426,492	426,492	284,328	142,164	142,164
3. Health & Hygiene Educ.	237,600	71,280	71,280	47,520	23,760	23,760
4. Water Quality Surveil.	92,400	27,720	27,720	18,480	9,240	9,240
5. NGO Assistance	158,400	47,520	47,520	31,680	15,840	15,840
6. Administrative Support	1,200,000	360,000	360,000	240,000	120,000	120,000
E. Physical Contingency (10% of sub-total A+B+C+D)	4,224,824	438,359	958,753	1,108,724	1,012,059	706,928
Total (A+B+C+D+E+F)	46,473,060	4,821,950	10,546,284	12,195,967	11,132,653	7,776,207
F. Others						
1. Price Contingency	17,357,064	1,800,933	3,938,896	4,555,030	4,157,897	2,904,309
2. Value Added Tax (VAT)	1,481,408	153,708	336,181	388,767	354,872	247,880
Grand Total	65,311,532	6,776,591	14,821,361	17,139,764	15,645,422	10,928,395

Note: Item A includes equity of users.

O&M Cost for GOP Assisted Level I Water Supply Project

Table 11.6.2 O&M Cost for Level I Facilities

	Deep Well	Shallow Well	Spring Dev't
Nos. of Facilities to be Constructed	8	21	4
Nos. of HHs to be Served	122	319	61
Reconstruction Cost (Peso)			
Unit Cost	289,000	32,100	294,100
Ttl. Reconst. Cost	2,312,000	674,100	
Ttl. Reconst. Cost/year	115,600	67,410	
Cost per HH/year	948	211	
Rehabilitation Cost (Peso)			
Unit Cost	37,600		
Ttl. Rehab. Cost	300,800		
Ttl. Rehab. Cost/year	30,080		
Cost per HH/year	247		
Recurrent Cost for O&M (Peso)			
Cost per HH/year	100	50	50
O&M Cost Total (Peso)			
Cost per HH/year	1,295	261	50

Note: 1) Reconstruction of deep and shallow wells shall be conducted every 20 and 10 years, respectively.

Spring development is excluded due to more than 20 years facility life.

2) Rehabilitation is applicable to deep wells every 10 years.

Table 11.6.3 O&M Cost per HH/month by Facility and Proportion to Monthly Family Income

	Deep Well	Shallow Well	Spring Dev't
O&M Cost per HH/month	108	22	4
Proportion (Mean)	2.0%	0.4%	0.1%
Proportion (Median)	2.5%	0.5%	0.1%

Table 11.6.4 Family Income (Unit: Pesos)

Annual ¹⁾		Monthly ²⁾	
Mean	Median	Mean	Median
43,958	34,190	5,497	4,276

Note: 1) 1994 NSO Family Income and Expenditure Survey

2) Estimated value in 2003 applying 7% inflation rate/year

O&M Cost for GOP Assisted Sanitation Project

Table 11.6.5 O&M Cost for Rural Sanitation (Unit: Pesos)

Nos. of Facilities to be Constructed		Unit Construction Cost		Yearly O&M Cost
Public Toilets	School Toilets	Public Toilets	School Toilets	
0	66	344,100	274,100	904,530

Note: O&M cost includes the salaries of maintenance staff, cost of pumping sludge from septic tanks, and rehabilitation cost, which is assumed to be equivalent to 5% of construction cost.

Table 11.6.6 O&M Cost for Urban Sanitation (Unit: Pesos)

Nos. of Facilities to be Constructed		Unit Construction Cost		Yearly O&M Cost
Public Toilets	School Toilets	Public Toilets	School Toilets	
19	0	344,100	274,100	326,895

12. MONITORING FOR MEDIUM-TERM DEVELOPMENT PLAN

12.4 Evaluation of Plan Implementation and Updating the PW4SP

Table 12.4.1 Draft Formats for Annual Sector Performance Summary Report (Provincial and Municipal Levels)

Form P-J

Province of _____
Provincial Water & Sanitation Monitoring System
 Annual Sector Performance Summary Report
 Period Covered : _____ to _____

I. Service Coverage

Municipality (1)	LAST YEAR				THIS YEAR			
	Population (2)	Persons with Safe Water & Sanitary Toilets (3)	Persons with Safe Water Only (4)	Persons with Sanitary Toilets Only (5)	Population (6)	Persons with Safe Water & Sanitary Toilets (7)	Persons with Safe Water Only (8)	Persons with Sanitary Toilets Only (9)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
Total								
% Served								
		Targets						

II. Sources & Uses of Capital Development Funds

Source of Fund (1)	Budget for Water Supply & Sanitation (2)	Actual Disbursement (3)	Uses of Funds							
			Water Source Development (4)	Water Supply Transmission (5)	Water Storage/ Treatment & Distribution (6)	Household Toilets (7)	School Toilets (8)	Public Toilets (9)	Others (10)	
A. Local Funds.										
Provincial Funds										
Municipal Funds										
A.										
B.										
C.										
D.										
E.										
F.										
G.										
H.										
I.										
J.										
SUB-TOTAL										
B. National Funds										
DPWH										
DOH										
LWUA										
SUB-TOTAL										
C. External Funds										
NGO										
NGO										
NGO										
SUB-TOTAL										
TOTAL										

V. Water Resources: Report any major changes in the availability and quality of water in the province. Attach map.

VI. Unit Cost Summary : Based on projects actually implemented and paid for during the reporting period, indicate the following average unit costs

1. Shallow Well (w/o hand pump) = _____ / Meter Depth
2. Deep Well (w/o pump) = _____ / Meter Depth
3. Pipeline = _____ / meter
4. Storage Tanks =
5. Others,

Municipality of _____
 Provincial Water & Sanitation Monitoring System

Annual Sector Performance Summary Report

Period Covered : _____ to _____

I. Service Coverage

Name of Barangay (1)	LAST YEAR				THIS YEAR			
	Population (2)	Persons with Safe Water & Sanitary Toilets (3)	Persons with Safe Water Only (4)	Persons with Sanitary Toilets Only (5)	Population (6)	Persons with Safe Water & Sanitary Toilets (7)	Persons with Safe Water Only (8)	Persons with Sanitary Toilets Only (9)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
Total								
% Served								

II. Sources & Uses of Capital Development Funds.

Source of Funds (1)	Budget (2)	Actual Disbursement (3)	Uses of Funds									
			Water Source Development (4)	Water Supply Transmission (5)	Water Storage/ Treatment & Distribution (6)	Household Toilets (7)	School Toilets (8)	Public Toilets (9)	Others (10)			
Municipal Funds												
Barangay Funds												
A.												
B.												
C.												
D.												
E.												
F.												
G.												
H.												
I.												
J.												
K.												
L.												
M.												
N.												
O.												
P.												
Q.												
R.												
S.												
T.												
U.												
W.												
SUB-TOTAL												
NGO												
NGO												
NGO												
SUB-TOTAL												
TOTAL												

1

2

3



JICA